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CHAPTER I
FEDERAL COMMUNICATIONS COMMISSION (Continued)
SUBCHAPTER C -- BROADCAST RADIO SERVICES

PART 78 -- CABLE TELEVISION RELAY SERVICE

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Source: 37 FR 3292, Feb. 12, 1972, unless otherwise noted.

Subpart A -- General

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§78.1 Purpose.

The rules and regulations set forth in this part provide for the licensing and operation of fixed or mobile cable television relay service stations (CARS) used for the transmission of television and related audio signals, signals of standard and FM broadcast stations, signals of instructional television fixed stations, and cablecasting from the point of reception to a terminal point from which the signals are distributed to the public by cable. In addition CARS stations may be used to transmit television and related audio signals to TV translator and low power TV stations.

[43 FR 1952, Jan. 13, 1978, as amended at 47 FR 21503, May 18, 1982]

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§78.3 Other pertinent rules.

Other pertinent provisions of the Commission's rules and regulations relating to the cable television relay service (CARS) are included in the following parts of this chapter:

Part 0 – Commission Organization.

Part 1 – Practice and Procedure.

Part 2 – Frequency Allocations and Radio Treaty Matters; General Rules and Regulations.

Part 17 – Construction Marking and Lighting of Antenna Structures.

Part 21 – Domestic Public Fixed Radio Services.

Part 74 – Experimental, Auxiliary, and Special Broadcast, and Other Program Distribution Services.

Part 76 – Cable Television Service.

Part 101 -- Fixed Microwave Services.

[55 FR 46014, Oct. 31, 1990, as amended at 65 FR 38326, June 20, 2000]

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§78.5 Definitions.

For purposes of this part, the following definitions are applicable. For other definitions, see part 76 (Cable Television Service) of this chapter.

(a) *Cable television relay service (CARS) station.* A fixed or mobile station used for the transmission of television and related audio signals, signals of standard and FM broadcast stations, signals of instructional television fixed stations, and cablecasting from the point of reception to a terminal point from the point of reception to a terminal point from which the signals are distributed to the public.

Note: Except where the rules contained in this part make separate provision, the term "Cable Television Relay service" or "CARS" includes the term "Local Distribution Service" or "LDS," the term "Cable Television Relay service Studio to Headend Link" or "SHL," and the term "Cable Television Relay PICKUP," as defined in paragraphs (b), (c), and (d) of this section.

(b) *Local distribution service (LDS) station.* A fixed CARS station used within a cable television system or systems for the transmission of television signals and related audio signals, signals of standard and FM broadcast stations, signals of instructional television fixed stations, and cablecasting from a local transmission point to one or more receiving points, from which the communications are distributed to the public. LDS stations may also engage in repeated operation.

(c) *Cable Television Relay Service Studio to Headend Link (SHL) station.* A fixed CARS station used for the transmission of television program material and related communications from a cable television studio to the headend of a cable television system.

(d) *Cable Television Relay Service PICKUP station.* A land mobile CARS station used for the transmission of television signals and related communications from the scenes of events occurring at points removed from cable television studios to cable television studios or headends.

(e) *Remote control operation.* Operation of a station by a qualified operator on duty at a control position from which the transmitter is not visible but which control position is equipped with suitable control and telemetering circuits so that the essential functions that could be performed at the transmitter can also be performed from the control point.

(f) *Attended operation.* Operation of a station by a qualified operator on duty at the place where the transmitting apparatus is located with the transmitter in plain view of the operator.

(g) *Unattended operation.* Operation of a station by automatic means whereby the transmitter is turned on and off and performs its functions without attention by a qualified operator.

(h) *Authorized bandwidth.* The maximum bandwidth authorized to be used by a station as specified in the station license. (See §§2.202 and 78.104.)

(i) *Cable network -entity.* A cable network-entity is an organization which produces programs available for simultaneous transmission by cable systems serving a combined total of at least 5,000,000 subscribers and having distribution facilities or circuits available to such affiliated stations or cable systems.

(j) *Other eligible system.* A system comprised of microwave radio channels in the Multipoint Distribution Service and Multichannel Multipoint Distribution Services (as defined in §21.2 of this chapter, and, on a part-time basis, in the Instructional Television Fixed Service (as defined in §74.901 of this chapter) that delivers multichannel television service over the air to subscribers.

[37 FR 3292, Feb. 12, 1972, as amended at 38 FR 16647, June 25, 1973; 39 FR 26025, July 16, 1974; 43 FR 1953, Jan. 13, 1978; 52 FR 7143, Mar. 9, 1987; 55 FR 46015, Oct. 31, 1990]

Subpart B -- Applications and Licenses

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§78.11 Permissible service.

(a) CARS stations are authorized to relay TV broadcast and low power TV and related audio signals, the signals of AM and FM broadcast stations, signals of instructional TV fixed stations, and cablecasting intended for use by one or more cable television systems or other eligible systems. LDS stations are authorized to relay television broadcast and related audio signals, the signals of AM and FM broadcast stations, signals of instructional television fixed stations, cablecasting, and such other communications as may be authorized by the Commission. Relaying includes retransmission of signals by intermediate relay stations in the system. CARS licensees may interconnect their facilities with those of other CARS, common carrier, or television auxiliary licensees, and may also retransmit the signals of such CARS, common carrier, or television auxiliary stations, provided that the program material retransmitted meets the requirements of this paragraph.

(b) The transmitter of a CARS station using FM transmission may be multiplexed to provide additional communication channels for the transmission of standard and FM broadcast station programs and operational communications directly related to the technical operation of the relay system (including voice communications, telemetry signals, alerting signals, fault reporting signals, and control signals). A CARS station will be authorized only where the principal use is the transmission of television broadcast program material or cablecasting: *Provided, however,* That this requirement shall not apply to LDS stations.

(c) CARS station licenses may be issued to cable television owners or operators or other eligible system owners or operators, and to cooperative enterprises owned by cable television owners or operators or other eligible system owners or operators. Television translator licensees may be members of such cooperative enterprises.

(d) CARS systems shall supply program material to cable television systems, other eligible systems, and translator stations only in the following circumstances.

(1) Where the licensee of the CARS station or system is owner or operator of the cable television systems or other eligible systems supplied with program material; or

(2) Where the licensee of the CARS station or system supplies program material to cable television systems, other eligible systems, or television translator stations either without charge or on a non-profit, cost-sharing basis pursuant to a written contract between the parties involved which provides that the CARS licensee shall have exclusive control over the operation of the CARS stations licensed to him and that contributions to capital and operating expenses are accepted only on a cost-sharing, nonprofit basis, prorated on an equitable basis among all cable television systems or other eligible systems being supplied with program material in whole or in part. Charges for the programming material are not subject to this restriction and cable network-entities may fully charge for their services. Records showing the cost of the service and its nonprofit, cost-sharing nature shall be maintained by the CARS licensee and held available for inspection by the Commission.

(e) The license of a CARS pickup station authorizes the transmission of program material, and related communications necessary to the accomplishment of such transmission, from the scenes of events occurring in places other than a cable television studio or the studio of another eligible system, to the studio, headend, or transmitter of its associated cable television system or other eligible system, or to such other cable television or other eligible systems as are carrying the same program material. CARS pickup stations may be used to provide temporary CARS studio-to-headend links, studio-to-transmitter links, or CARS circuits consistent with this part without further authority of the Commission: *Provided, however,* That prior Commission authority shall be obtained if the transmitting antenna to be installed will increase the height of any natural formation or manmade structure by more than 6.1 meters (20 feet) and will be in existence for a period of more than 2 consecutive days: *And provided, further,* That if the transmitting equipment is to be operated for more than 1 day outside of the area to which the CARS station has been licensed, the Commission, the Engineer in charge of the district in which the station is licensed to operate, and the Engineer in charge of the district in which the equipment will be temporarily operated shall be notified at least 1 day prior to such operation. If the decision to continue operation for more than 1 day is not made until the operation has begun, notice shall be given to the Commission and the relevant Engineers in charge within 1 day after such decision. In all instances, the Commission and the relevant Engineers in charge shall be notified when the transmitting equipment has been returned to its licensed area.

(f) A cable network-entity may use CARS stations to transmit their own television program materials to cable television systems, other eligible systems, other cable network-entities, broadcast stations, and broadcast network-entities: *Provided, however,* That the bands 2025-2110 MHz, 6425-6526 MHz and 6875-7125 MHz may be used by cable network-entities only for CARS pick-up stations.

(g) The provisions of paragraph (d) of this section and §78.13 shall not apply to a licensee who has been licensed in the CARS service pursuant to §101.705 of this chapter, except that paragraph (d) of this section shall apply with respect to facilities added or cable television and other eligible systems first served after February 1, 1966.

[37 FR 3292, Feb. 12, 1972, as amended at 37 FR 15926, Aug. 8, 1972; 43 FR 1953, Jan. 13, 1978; 43 FR 25127, June 9, 1978; 44 FR 32382, June 6, 1979; 47 FR 21503, May 18, 1982; 50 FR 23421, June 4, 1985; 52 FR 7144, Mar. 9, 1987; 55 FR 46015, Oct. 31, 1990; 58 FR 44952, Aug. 25, 1993; 65 FR 38326, June 20, 2000; 65 FR 48181, Aug. 7, 2000]

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§78.13 Eligibility for license.

A license for CARS station will be issued only:

- (a) To the owner or one who is responsible for the management and operation of a cable television system,
- (b) To a cooperative enterprise wholly owned by cable television owners or operators, or
- (c) A cable network-entity upon showing that the applicant is qualified under the Communications Act of 1934, that frequencies are available for the proposed operation, and that the public interest, convenience, and necessity will be served by a grant thereof.
- (d) Licensees and conditional licensees of channels in the Multipoint Distribution Service and Multichannel Multipoint Distribution Service as defined in §21.2 of this chapter, or entities that hold an executed lease agreement with an MDS or MMDS licensee or conditional licensee or with an Instructional Television Fixed Service licensee or permittee.
- (e) Licensees, construction permittees, and applicants of channels in the Instructional Television Fixed Service (ITFS) as defined in §74.901 if:
 - (1) The station is authorized or the application proposes authorization as a point -to-point operation; and
 - (2) Grant of a CARS license would allow displacement of any E or F channel of the ITFS point -to-point operation by a Multipoint Distribution Service (MDS) or Multichannel Multipoint Distribution Service (MMDS) applicant, conditional licensee, or licensee.
- (f) To private cable operators and other multichannel video programming distributors not specifically identified in this section.

[52 FR 7144, Mar. 9, 1987, as amended at 55 FR 46015, Oct. 31, 1990; 56 FR 57601, Nov. 13, 1991; 67 FR 43259, June 27, 2002]

Effective Date Note: At 67 FR 43259, June 27, 2002, §78.13 was amended by adding paragraph (f). This paragraph contains information collection and recordkeeping requirements and will not become effective until approval has been given by the Office of Management and Budget.

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§78.15 Contents of applications.

(a) Applications for authorization in the Cable Television Relay Service shall be submitted on FCC Form 327, and shall contain the information requested therein. Applications requiring fees as set forth at part 1, subpart G of this chapter must be filed in accordance with §0.401(b) of the rules.

(b) An application for a CARS studio to headend link or LDS station license shall contain a statement that the applicant has investigated the possibility of using cable rather than microwave and the reasons why it was decided to use microwave rather than cable.

Note: Each applicant filing pursuant to §78.15 is responsible for the continuing accuracy and completeness of all information in such applications. The provisions of §1.65 are wholly applicable to applications pursuant to §78.15, as well as to amendments filed pursuant to §78.17, and objections filed pursuant to §78.22, except that where the specific provisions of §§78.15, 78.17, 78.22 conflict with the provisions of §1.65, the specific provisions are controlling, e.g., where requirements for service on specified parties of certain information may vary.

(c) CARS applicants must follow the procedures prescribed in subpart 1 of part 1 of this chapter (§§1.1301 through 1.1319) regarding the filing of environmental assessments unless Commission action authorizing construction of a CARS station would be categorically excluded from the environmental processing requirements under §1.1306 of this chapter.

[41 FR 3719, Jan. 23, 1976, as amended at 41 FR 32429, Aug. 3, 1976; 42 FR 61864, Dec. 7, 1977; 50 FR 23421, June 4, 1985; 52 FR 10231, Mar. 31, 1987; 55 FR 20398, May 16, 1990]

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§78.16 Who may sign applications.

(a) Applications, amendments thereto, and related statements of fact required by the Commission shall be personally signed by the applicant, if the applicant is an individual; by one of the partners, if the applicant is a partnership; by an officer, if the applicant is a corporation; or by a member who is an officer, if the applicant is an unincorporated association. Applications, amendments, and related statements of fact filed on behalf of government entities shall be signed by such duly elected or appointed officials as may be competent to do so under the laws of the applicable jurisdiction.

(b) Applications, amendments thereto, and related statements of fact required by the Commission may be signed by the applicant's attorney in case of the applicant's physical disability or of his absence from the United States. The attorney shall in that event separately set forth the reasons why the application is not signed by the applicant. In addition, if any matter is stated on the basis of the attorney's belief only (rather than his knowledge), he shall separately set forth his reasons for believing that such statements are true.

(c) Only the original of applications, amendments, or related statements of fact need be signed; copies may be conformed.

(d) Applications, amendments, and related statements of fact need not be submitted under oath. Willful false statements made therein, however, are punishable by fine and imprisonment, United States Code, title 18, section 1001, and by appropriate administrative sanctions, including revocation of station license pursuant to section 312(a)(1) of the Communications Act of 1934, as amended.

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§78.17 Amendment of applications.

Any application may be amended as a matter of right prior to the adoption date of any final action taken by the Commission with respect to the application, merely by filing the appropriate number of copies of the amendment in question duly executed in accordance with §78.16. If a petition to deny has been filed, the amendment shall be served on the petitioner.

[37 FR 15926, Aug. 8, 1972]

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§78.18 Frequency assignments.

(a) The Cable Television Relay Service is assigned the band of frequencies from 12.70 to 13.20 GHz. This band is shared with the Fixed-Satellite Service (earth-to-space) from 12.70 to 12.75 GHz and Television Auxiliary Broadcast Stations from 12.70 to 13.20 GHz. The following channels may be assigned to CARS stations for the propagation of radio waves with the indicated polarization:

(1) For CARS stations using FM transmission:

| Group A Channels | |
|------------------|--------------------------|
| Designation | Channel boundaries (GHz) |
| A01\1\..... | 12.700-12.725 |
| A02\1\..... | 12.725-12.750 |
| A03\1\..... | 12.750-12.775 |
| A04\1\..... | 12.775-12.800 |
| A05\1\..... | 12.800-12.825 |
| A06\1\..... | 12.825-12.850 |
| A07\1\..... | 12.850-12.875 |
| A08\1\..... | 12.875-12.900 |
| A09\1\..... | 12.900-12.925 |
| A10\1\..... | 12.925-12.950 |
| A11\1\..... | 12.950-12.975 |
| A12\1\..... | 12.975-13.000 |
| A13\1\..... | 13.000-13.025 |
| A14\1\..... | 13.025-13.050 |
| A15\1\..... | 13.050-13.075 |
| A16\1\..... | 13.075-13.100 |
| A17\1\..... | 13.100-13.125 |
| A18\1\..... | 13.125-13.150 |
| A19\1\..... | \2\13.150-13.175 |
| A20\1\..... | \2\13.170-13.200 |

\1\ Appropriate polarization designation:

H=Horizontally polarized propagated radio wave.

V=Vertically polarized propagated radio wave.
R=Right-handed (clockwise) elliptically polarized propagated radio wave.
L=Left-handed (counter-clockwise) elliptically polarized propagated radio wave.

\2\See paragraph (1) of this section.

Note: Polarization designations shall be in accordance with IEEE standard 100-1972 as amended.

| Group B Channels | |
|------------------|--------------------------|
| Designation | Channel boundaries (GHz) |
| B01\1\..... | 12.7125-12.7375 |
| B02\1\..... | 12.7375-12.7625 |
| B03\1\..... | 12.7625-12.7875 |
| B04\1\..... | 12.7875-12.8125 |
| B05\1\..... | 12.8125-12.8375 |
| B06\1\..... | 12.8375-12.8625 |
| B07\1\..... | 12.8625-12.8875 |
| B08\1\..... | 12.8875-12.9125 |
| B09\1\..... | 12.9125-12.9375 |
| B10\1\..... | 12.9375-12.9625 |
| B11\1\..... | 12.9625-12.9875 |
| B12\1\..... | 12.9875-13.0125 |
| B13\1\..... | 13.0125-13.0375 |
| B14\1\..... | 13.0375-13.0625 |
| B15\1\..... | 13.0625-13.0875 |
| B16\1\..... | 13.0875-13.1125 |
| B17\1\..... | 13.1125-13.1375 |
| B18\1\..... | \2\13.1375-13.1625 |
| | 5 |
| B19\1\..... | \2\13.1625-13.1875 |
| | 5 |

\1\See footnote 1 following GROUP A CHANNELS.

\2\See paragraph (1) of this section.

Note: Polarization designations shall be in accordance with IEEE standard 100-1972 as amended.

(2) CARS stations using vestigial sideband AM transmission and FM transmission requiring a necessary bandwidth of no more than 6 MHz.

| Group C Channels | | |
|----------------------|-------------|--------------------|
| Alternate channel | Designation | Channel boundaries |
| boundaries (GHz) [Ca | | (GHz) [C channels] |
| channels] | | |

| | |
|-----------------|--------------------|
| C01\1\..... | 12.7005-12.7065 |
| 12.7005-12.7065 | |
| C02\1\..... | 12.7065-12.7125 |
| 12.7065-12.7125 | |
| C03\1\..... | 12.7125-12.7185 |
| 12.7125-12.7185 | |
| C04\1\..... | 12.7185-12.7225\2\ |
| 12.7185-12.7245 | |
| C05\1\..... | 12.7225-12.7285 |
| 12.7225-12.7305 | |
| C06\1\..... | 12.7285-12.7345 |
| 12.7285-12.7365 | |
| C07\1\..... | 12.7345-12.7405 |
| 12.7345-12.7425 | |
| C08\1\..... | 12.7405-12.7465 |
| 12.7405-12.7485 | |
| C09\1\..... | 12.7465-12.7525 |
| 12.7465-12.7545 | |
| C10\1\..... | 12.7525-12.7545\2\ |
| N/A | |
| C11\1\..... | 12.7545-12.7605 |
| 12.7545-12.7605 | |
| C12\1\..... | 12.7605-12.7665 |
| 12.7605-12.7665 | |
| C13\1\..... | 12.7665-12.7725 |
| 12.7665-12.7725 | |
| C14\1\..... | 12.7725-12.7785 |
| 12.7725-12.7785 | |
| C15\1\..... | 12.7785-12.7845 |
| 12.7785-12.7845 | |
| C16\1\..... | 12.7845-12.7905 |
| 12.7845-12.7905 | |
| C17\1\..... | 12.7905-12.7965 |
| 12.7905-12.7965 | |
| C18\1\..... | 12.7965-12.8025 |
| 12.7965-12.8025 | |
| C19\1\..... | 12.8025-12.8085 |
| 12.8025-12.8085 | |
| C20\1\..... | 12.8085-12.8145 |
| 12.8085-12.8145 | |
| C21\1\..... | 12.8145-12.8205 |
| 12.8145-12.8205 | |
| C22\1\..... | 12.8205-12.8265 |
| 12.8205-12.8265 | |
| C23\1\..... | 12.8265-12.8325 |
| 12.8265-12.8325 | |
| C24\1\..... | 12.8325-12.8385 |
| 12.8325-12.8385 | |
| C25\1\..... | 12.8385-12.8445 |
| 12.8385-12.8445 | |
| C26\1\..... | 12.8445-12.8505 |
| 12.8445-12.8505 | |
| C27\1\..... | 12.8505-12.8565 |
| 12.8505-12.8565 | |
| C28\1\..... | 12.8565-12.8625 |
| 12.8565-12.8625 | |
| C29\1\..... | 12.8625-12.8685 |
| 12.8625-12.8685 | |

| | |
|-----------------|-----------------|
| C30\1\..... | 12.8685-12.8745 |
| 12.8685-12.8745 | |
| C31\1\..... | 12.8745-12.8805 |
| 12.8745-12.8805 | |
| C32\1\..... | 12.8805-12.8865 |
| 12.8805-12.8865 | |
| C33\1\..... | 12.8865-12.8925 |
| 12.8865-12.8925 | |
| C34\1\..... | 12.8925-12.8985 |
| 12.8925-12.8985 | |
| C35\1\..... | 12.8985-12.9045 |
| 12.8985-12.9045 | |
| C36\1\..... | 12.9045-12.9105 |
| 12.9045-12.9105 | |
| C37\1\..... | 12.9105-12.9165 |
| 12.9105-12.9165 | |
| C38\1\..... | 12.9165-12.9225 |
| 12.9165-12.9225 | |
| C39\1\..... | 12.9225-12.9285 |
| 12.9225-12.9285 | |
| C40\1\..... | 12.9285-12.9345 |
| 12.9285-12.9345 | |
| C41\1\..... | 12.9345-12.9405 |
| 12.9345-12.9405 | |
| C42\1\..... | 12.9405-12.9465 |
| 12.9405-12.9465 | |
| C43\1\..... | 12.9465-12.9525 |
| 12.9465-12.9525 | |

\1\See footnote 1 following GROUP A CHANNELS.

\2\For transmission of pilot subcarriers or other authorized narrow band signals.

Group D Channels

| Alternate channel boundaries (GHz) [Da channels] | Designation | Channel boundaries (GHz) [D channels] |
|--|-------------|--|
| D01\1\..... | | 12.7597-12.7657 |
| 12.7597-12.7657 | | |
| D02\1\..... | | 12.7657-12.7717 |
| 12.7657-12.7717 | | |
| D03\1\..... | | 12.7717-12.7777 |
| 12.7717-12.7777 | | |
| D04\1\..... | | 12.7777-12.7817\2\ |
| 12.7777-12.7837 | | |
| D05\1\..... | | 12.7817-12.7877 |
| 12.7837-12.7897 | | |
| D06\1\..... | | 12.7877-12.7937 |
| 12.7897-12.7957 | | |
| D07\1\..... | | 12.7937-12.7997 |
| 12.7957-12.8017 | | |

| | |
|-----------------|--------------------|
| D08\1\..... | 12.7997-12.8057 |
| 12.8017-12.8077 | |
| D09\1\..... | 12.8057-12.8117 |
| 12.8077-12.8137 | |
| D10\1\..... | 12.8117-12.8137\2\ |
| N/A | |
| D11\1\..... | 12.8137-12.8197 |
| 12.8137-12.8197 | |
| D12\1\..... | 12.8197-12.8257 |
| 12.8197-12.8257 | |
| D13\1\..... | 12.8257-12.8317 |
| 12.8257-12.8317 | |
| D14\1\..... | 12.8317-12.8377 |
| 12.8317-12.8377 | |
| D15\1\..... | 12.8377-12.8437 |
| 12.8377-12.8437 | |
| D16\1\..... | 12.8437-12.8497 |
| 12.8437-12.8497 | |
| D17\1\..... | 12.8497-12.8557 |
| 12.8497-12.8557 | |
| D18\1\..... | 12.8557-12.8617 |
| 12.8557-12.8617 | |
| D19\1\..... | 12.8617-12.8677 |
| 12.8617-12.8677 | |
| D20\1\..... | 12.8677-12.8737 |
| 12.8677-12.8737 | |
| D21\1\..... | 12.8737-12.8797 |
| 12.8737-12.8797 | |
| D22\1\..... | 12.8797-12.8857 |
| 12.8797-12.8857 | |
| D23\1\..... | 12.8857-12.8917 |
| 12.8857-12.8917 | |
| D24\1\..... | 12.8917-12.8977 |
| 12.8917-12.8977 | |
| D25\1\..... | 12.8977-12.9037 |
| 12.8977-12.9037 | |
| D26\1\..... | 12.9037-12.9097 |
| 12.9037-12.9097 | |
| D27\1\..... | 12.9097-12.9157 |
| 12.9097-12.9157 | |
| D28\1\..... | 12.9157-12.9217 |
| 12.9157-12.9217 | |
| D29\1\..... | 12.9217-12.9277 |
| 12.9217-12.9277 | |
| D30\1\..... | 12.9277-12.9337 |
| 12.9277-12.9337 | |
| D31\1\..... | 12.9337-12.9397 |
| 12.9337-12.9397 | |
| D32\1\..... | 12.9397-12.9457 |
| 12.9397-12.9457 | |
| D33\1\..... | 12.9457-12.9517 |
| 12.9457-12.9517 | |
| D34\1\..... | 12.9517-12.9577 |
| 12.9517-12.9577 | |
| D35\1\..... | 12.9577-12.9637 |
| 12.9577-12.9637 | |
| D36\1\..... | 12.9637-12.9697 |
| 12.9637-12.9697 | |

| | |
|-----------------|-----------------|
| D37\1\..... | 12.9697-12.9757 |
| 12.9697-12.9757 | |
| D38\1\..... | 12.9757-12.9817 |
| 12.9757-12.9817 | |
| D39\1\..... | 12.9817-12.9877 |
| 12.9817-12.9877 | |
| D40\1\..... | 12.9877-12.9937 |
| 12.9877-12.9937 | |
| D41\1\..... | 12.9937-12.9997 |
| 12.9937-12.9997 | |
| D42\1\..... | 12.9997-13.0057 |
| 12.9997-13.0057 | |
| D43\1\..... | 13.0057-13.0117 |
| 13.0057-13.0117 | |

 \1\See footnote 1 following GROUP A CHANNELS.
 \2\For transmission of pilot subcarriers or other authorized narrow band signals.

 Group E Channels

| Alternate channel boundaries (GHz) [Ea channels] | Designation | Channel boundaries (GHz) [E channels] |
|--|-------------|--|
| ----- | | |
| E01\1\..... | | 12.9525-12.9585 |
| 12.9525-12.9585 | | |
| E02\1\..... | | 12.9585-12.9645 |
| 12.9585-12.9645 | | |
| E03\1\..... | | 12.9645-12.9705 |
| 12.9645-12.9705 | | |
| E04\1\..... | | 12.9705-12.9745\2\ |
| 12.9705-12.9765 | | |
| E05\1\..... | | 12.9745-12.9805 |
| 12.9765-12.9825 | | |
| E06\1\..... | | 12.9805-12.9865 |
| 12.9825-12.9885 | | |
| E07\1\..... | | 12.9865-12.9925 |
| 12.9885-12.9945 | | |
| E08\1\..... | | 12.9925-12.9985 |
| 12.9945-13.0005 | | |
| E09\1\..... | | 12.9985-13.0045 |
| 13.0005-13.0065 | | |
| E10\1\..... | | 13.0045-13.0065\2\ |
| N/A | | |
| E11\1\..... | | 13.0065-13.0125 |
| 13.0065-13.0125 | | |
| E12\1\..... | | 13.0125-13.0185 |
| 13.0125-13.0185 | | |
| E13\1\..... | | 13.0185-13.0245 |
| 13.0185-13.0245 | | |
| E14\1\..... | | 13.0245-13.0305 |
| 13.0245-13.0305 | | |

| | |
|--------------------|--------------------|
| E15\1\..... | 13.0305-13.0365 |
| 13.0305-13.0365 | |
| E16\1\..... | 13.0365-13.0425 |
| 13.0365-13.0425 | |
| E17\1\..... | 13.0425-13.0485 |
| 13.0425-13.0485 | |
| E18\1\..... | 13.0485-13.0545 |
| 13.0485-13.0545 | |
| E19\1\..... | 13.0545-13.0605 |
| 13.0545-13.0605 | |
| E20\1\..... | 13.0605-13.0665 |
| 13.0605-13.0665 | |
| E21\1\..... | 13.0665-13.0725 |
| 13.0665-13.0725 | |
| E22\1\..... | 13.0725-13.0785 |
| 13.0725-13.0785 | |
| E23\1\..... | 13.0785-13.0845 |
| 13.0785-13.0845 | |
| E24\1\..... | 13.0845-13.0905 |
| 13.0845-13.0905 | |
| E25\1\..... | 13.0905-13.0965 |
| 13.0905-13.0965 | |
| E26\1\..... | 13.0965-13.1025 |
| 13.0965-13.1025 | |
| E27\1\..... | 13.1025-13.1085 |
| 13.1025-13.1085 | |
| E28\1\..... | 13.1085-13.1145 |
| 13.1085-13.1145 | |
| E29\1\..... | 13.1145-13.1205 |
| 13.1145-13.1205 | |
| E30\1\..... | 13.1205-13.1265 |
| 13.1205-13.1265 | |
| E31\1\..... | 13.1265-13.1325 |
| 13.1265-13.1325 | |
| E32\1\..... | 13.1325-13.1385 |
| 13.1325-13.1385 | |
| E33\1\..... | 13.1385-13.1445 |
| 13.1385-13.1445 | |
| E34\1\..... | 13.1445-13.1505\3\ |
| 13.1445-13.1505\3\ | |
| E35\1\..... | 13.1505-13.1565\3\ |
| 13.1505-13.1565\3\ | |
| E36\1\..... | 13.1565-13.1625\3\ |
| 13.1565-13.1625\3\ | |
| E37\1\..... | 13.1625-13.1685\3\ |
| 13.1625-13.1685\3\ | |
| E38\1\..... | 13.1685-13.1745\3\ |
| 13.1685-13.1745\3\ | |
| E39\1\..... | 13.1745-13.1805\3\ |
| 13.1745-13.1805\3\ | |
| E40\1\..... | 13.1805-13.1865\3\ |
| 13.1805-13.1865\3\ | |
| E41\1\..... | 13.1865-13.1925\3\ |
| 13.1865-13.1925\3\ | |
| E42\1\..... | 13.1925-13.1985\3\ |
| 13.1925-13.1985\3\ | |

\1\See footnote 1 following GROUP A CHANNELS.
 \2\For transmission of pilot subcarriers or other authorized narrow band signals.
 \3\See paragraph (1) of this section.

Group F Channels

| Alternate channel boundaries (GHz) [Fa channels] | Designation | Channel boundaries (GHz) [F channels] |
|--|-------------|--|
| F01\1\..... 13.0125-13.0185 | | 13.0125-13.0185 |
| F02\1\..... 13.0185-13.0245 | | 13.0185-13.0245 |
| F03\1\..... 13.0245-13.0305 | | 13.0245-13.0305 |
| F04\1\..... 13.0305-13.0365 | | 13.0305-13.0345\2\ |
| F05\1\..... 13.0365-13.0425 | | 13.0345-13.0405 |
| F06\1\..... 13.0425-13.0485 | | 13.0405-13.0465 |
| F07\1\..... 13.0485-13.0545 | | 13.0465-13.0525 |
| F08\1\..... 13.0545-13.0605 | | 13.0525-13.0585 |
| F09\1\..... 13.0605-13.0665 | | 13.0585-13.0645 |
| F10\1\..... N/A | | 13.0645-13.0665\2\ |
| F11\1\..... 13.0665-13.0725 | | 13.0665-13.0725 |
| F12\1\..... 13.0725-13.0785 | | 13.0725-13.0785 |
| F13\1\..... 13.0785-13.0845 | | 13.0785-13.0845 |
| F14\1\..... 13.0845-13.0905 | | 13.0845-13.0905 |
| F15\1\..... 13.0905-13.0965 | | 13.0905-13.0965 |
| F16\1\..... 13.0965-13.1025 | | 13.0965-13.1025 |
| F17\1\..... 13.1025-13.1085 | | 13.1025-13.1085 |
| F18\1\..... 13.1085-13.1145 | | 13.1085-13.1145 |
| F19\1\..... 13.1145-13.1205 | | 13.1145-13.1205 |
| F20\1\..... 13.1205-13.1265 | | 13.1205-13.1265 |
| F21\1\..... 13.1265-13.1325 | | 13.1265-13.1325 |

| | |
|--------------------|--------------------|
| F22\1\..... | 13.1325-13.1385 |
| 13.1325-13.1385 | |
| F23\1\..... | 13.1385-13.1445 |
| 13.1385-13.1445 | |
| F24\1\..... | 13.1445-13.1505\3\ |
| 13.1445-13.1505\3\ | |
| F25\1\..... | 13.1505-13.1565\3\ |
| 13.1505-13.1565\3\ | |
| F26\1\..... | 13.1565-13.1625\3\ |
| 13.1565-13.1625\3\ | |
| F27\1\..... | 13.1625-13.1685\3\ |
| 13.1625-13.1685\3\ | |
| F28\1\..... | 13.1685-13.1745\3\ |
| 13.1685-13.1745\3\ | |
| F29\1\..... | 13.1745-13.1805\3\ |
| 13.1745-13.1805\3\ | |
| F30\1\..... | 13.1805-13.1865\3\ |
| 13.1805-13.1865\3\ | |
| F31\1\..... | 13.1865-13.1925\3\ |
| 13.1865-13.1925\3\ | |
| F32\1\..... | 13.1925-13.1985\3\ |
| 13.1925-13.1985\3\ | |

 \1\See footnote 1 following GROUP A CHANNELS.
 \2\For transmission of pilot subcarriers or other authorized narrow band signals.
 \3\See paragraph (1) of this section.

(3) For CARS stations using AM and FM transmission requiring a necessary bandwidth of no more than 12.5 MHz.

Group K Channel

| Designation | Channel boundaries (GHz) |
|-------------|--------------------------|
| K01\1\..... | 12.7000-12.7125 |
| K02\1\..... | 12.7125-12.7250 |
| K03\1\..... | 12.7250-12.7375 |
| K04\1\..... | 12.7375-12.7500 |
| K05\1\..... | 12.7500-12.7625 |
| K06\1\..... | 12.7625-12.7750 |
| K07\1\..... | 12.7750-12.7875 |
| K08\1\..... | 12.7875-12.8000 |
| K09\1\..... | 12.8000-12.8125 |
| K10\1\..... | 12.8125-12.8250 |
| K11\1\..... | 12.8250-12.8375 |
| K12\1\..... | 12.8375-12.8500 |
| K13\1\..... | 12.8500-12.8625 |
| K14\1\..... | 12.8625-12.8750 |
| K15\1\..... | 12.8750-12.8875 |
| K16\1\..... | 12.8875-12.9000 |
| K17\1\..... | 12.9000-12.9125 |
| K18\1\..... | 12.9125-12.9250 |
| K19\1\..... | 12.9250-12.9375 |
| K20\1\..... | 12.9375-12.9500 |
| K21\1\..... | 12.9500-12.9625 |
| K22\1\..... | 12.9625-12.9750 |

| | |
|----------|-----------------|
| K23\1\ | 12.9750-12.9875 |
| K24\1\ | 12.9875-13.0000 |
| K25\1\ | 13.0000-13.0125 |
| K26\1\ | 13.0125-13.0250 |
| K27\1\ | 13.0250-13.0375 |
| K28\1\ | 13.0375-13.0500 |
| K29\1\ | 13.0500-13.0625 |
| K30\1\ | 13.0625-13.0750 |
| K31\1\ | 13.0750-13.0875 |
| K32\1\ | 13.0875-13.1000 |
| K33\1\ | 13.1000-13.1125 |
| K34\1\ | 13.1125-13.1250 |
| K35\1\ | 13.1250-13.1375 |
| K36\1\ | 13.1375-13.1500 |
| K37\1\2\ | 13.1500-13.1625 |
| K38\1\2\ | 13.1625-13.1750 |
| K39\1\2\ | 13.1750-13.1875 |
| K40\1\2\ | 13.1875-13.2000 |

\1\See footnote 1 following GROUP A CHANNELS.

\2\See paragraph (1) of this section.

(4) The Cable Television Relay Service is also assigned the following frequencies in the 17,700-19,700 MHz band. These frequencies are co-equally shared with stations in other services under parts 25, 74, and 101 of this chapter. Cable Television Relay Service stations operating on frequencies in the sub-band 19.26-19.3 GHz that were licensed or had applications pending before the Commission as of September 18, 1998 may continue those operations on a shared co-primary basis with other services under parts 25, 74, and 101 of this chapter. Such stations, however, are subject to relocation by licensees in the fixed-satellite service. Such relocation is subject to the provisions of §§101.85 through 101.97 of this chapter. No new part 78 licenses will be granted in the 19.26 - 19.3 GHz band after June 8, 2000. Licensees may use either a two-way link or one or both frequencies of a frequency pair for a one-way link and shall coordinate proposed operations pursuant to procedures required in §101.103 (d) of this chapter. These bands may be used for analog or digital modulation.

(i) 2 MHz maximum authorized bandwidth channel:

| Transmit (receive) (MHz) | Receive (transmit) (MHz) |
|--------------------------|--------------------------------|
| 18141.0..... | n/a |

(ii) 6 MHz maximum authorized bandwidth channels:

| Transmit (receive) (MHz) | Receive (transmit) (MHz) |
|--------------------------|--------------------------------|
| 216 MHz Separation | |
| 18145.0..... | n/a |

| | |
|--------------|---------|
| 18151.0..... | 18367.0 |
| 18157.0..... | 18373.0 |
| 18163.0..... | 18379.0 |
| 18169.0..... | 18385.0 |
| 18175.0..... | 18391.0 |
| 18181.0..... | 18397.0 |
| 18187.0..... | 18403.0 |
| 18193.0..... | 18409.0 |
| 18199.0..... | 18415.0 |
| 18205.0..... | 18421.0 |
| 18211.0..... | 18427.0 |
| 18217.0..... | 18433.0 |
| 18223.0..... | 18439.0 |
| 18229.0..... | 18445.0 |
| 18235.0..... | 18451.0 |
| 18241.0..... | 18457.0 |
| 18247.0..... | 18463.0 |
| 18253.0..... | 18469.0 |
| 18259.0..... | 18475.0 |
| 18265.0..... | 18481.0 |
| 18271.0..... | 18487.0 |
| 18277.0..... | 18493.0 |
| 18283.0..... | 18499.0 |
| 18289.0..... | 18505.0 |
| 18295.0..... | 18511.0 |
| 18301.0..... | 18517.0 |
| 18307.0..... | 18523.0 |
| 18313.0..... | 18529.0 |
| 18319.0..... | 18535.0 |
| 18325.0..... | 18541.0 |
| 18331.0..... | 18547.0 |
| 18337.0..... | 18553.0 |
| 18343.0..... | 18559.0 |
| 18349.0..... | 18565.0 |
| 18355.0..... | 18571.0 |
| 18361.0..... | 18577.0 |

(iii) 10 MHz maximum authorized bandwidth channels:

| Transmit (receive) (MHz) | Receive (transmit) (MHz) |
|--------------------------|--------------------------------|
| 1560 MHz Separation | |
| 17705.0..... | 19265.0 |
| 17715.0..... | 19275.0 |
| 17725.0..... | 19285.0 |
| 17735.0..... | 19295.0 |
| 17745.0..... | 19305.0 |
| 17755.0..... | 19315.0 |
| 17765.0..... | 19325.0 |
| 17775.0..... | 19335.0 |
| 17785.0..... | 19345.0 |

| | |
|--------------|---------|
| 17795.0..... | 19355.0 |
| 17805.0..... | 19365.0 |
| 17815.0..... | 19375.0 |
| 17825.0..... | 19385.0 |
| 17835.0..... | 19395.0 |
| 17845.0..... | 19405.0 |
| 17855.0..... | 19415.0 |
| 17865.0..... | 19425.0 |
| 17875.0..... | 19435.0 |
| 17885.0..... | 19445.0 |
| 17895.0..... | 19455.0 |
| 17905.0..... | 19465.0 |
| 17915.0..... | 19475.0 |
| 17925.0..... | 19485.0 |
| 17935.0..... | 19495.0 |
| 17945.0..... | 19505.0 |
| 17955.0..... | 19515.0 |
| 17965.0..... | 19525.0 |
| 17975.0..... | 19535.0 |
| 17985.0..... | 19545.0 |
| 17995.0..... | 19555.0 |
| 18005.0..... | 19565.0 |
| 18015.0..... | 19575.0 |
| 18025.0..... | 19585.0 |
| 18035.0..... | 19595.0 |
| 18045.0..... | 19605.0 |
| 18055.0..... | 19615.0 |
| 18065.0..... | 19625.0 |
| 18075.0..... | 19635.0 |
| 18085.0..... | 19645.0 |
| 18095.0..... | 19655.0 |
| 18105.0..... | 19665.0 |
| 18115.0..... | 19675.0 |
| 18125.0..... | 19685.0 |
| 18135.0..... | 19695.0 |

(iv) 20 MHz maximum authorized bandwidth channels:

| Transmit (receive) (MHz) | Receive (transmit) (MHz) |
|--------------------------|--------------------------------|
| 1560 MHz Separation | |
| 1 1 17710.0..... | 19270.0 |
| 17730.0..... | 19290.0 |
| 17750.0..... | 19310.0 |
| 17770.0..... | 19330.0 |
| 17790.0..... | 19350.0 |
| 17810.0..... | 19370.0 |
| 17830.0..... | 19390.0 |
| 17850.0..... | 19410.0 |
| 17870.0..... | 19430.0 |
| 17890.0..... | 19450.0 |

| | |
|--------------|---------|
| 17910.0..... | 19470.0 |
| 17930.0..... | 19490.0 |
| 17950.0..... | 19510.0 |
| 17970.0..... | 19530.0 |
| 17990.0..... | 19550.0 |
| 18010.0..... | 19570.0 |
| 18030.0..... | 19590.0 |
| 18050.0..... | 19610.0 |
| 18070.0..... | 19630.0 |
| 18090.0..... | 19650.0 |
| 18110.0..... | 19670.0 |
| 18130.0..... | 19690.0 |

(v) 40 MHz maximum authorized bandwidth channels:

| Transmit (receive) (MHz) | Receive (transmit) (MHz) |
|--------------------------|--------------------------------|
| ----- | |
| 1560 MHz Separation | |
| ----- | |
| 1 1 17720.0..... | 19280.0 |
| 17760.0..... | 19320.0 |
| 17800.0..... | 19360.0 |
| 17840.0..... | 19400.0 |
| 17880.0..... | 19440.0 |
| 17920.0..... | 19480.0 |
| 17960.0..... | 19520.0 |
| 18000.0..... | 19560.0 |
| 18040.0..... | 19600.0 |
| 18080.0..... | 19640.0 |
| 18120.0..... | 19680.0 |

(vi) 80 MHz maximum authorized bandwidth channels:

| Transmit (receive) (MHz) | Receive (transmit) (MHz) |
|--------------------------|--------------------------------|
| ----- | |
| 1560 MHz Separation | |
| ----- | |
| 1 1 17740.0..... | 19300.0 |
| 17820.0..... | 19380.0 |
| 17900.0..... | 19460.0 |
| 17980.0..... | 19540.0 |
| 18060.0..... | 19620.0 |

(5) *6425 to 6525 MHz -- Mobile only.* Paired and unpaired operations permitted. Use of this spectrum for direct delivery of video programs to the general public or multi-channel cable distribution is not permitted. This band is co-equally shared with mobile stations licensed pursuant to Parts 74 and 101 of the Commission's Rules. The following channel plans apply.

(i) 1 MHz maximum authorized bandwidth channels.

| Transmit (or receive) (MHz) | Receive (or transmit) (MHz) |
|-----------------------------|-----------------------------|
| 6425.5..... | 6475.5 |
| 6450.5..... | 6500.5 |

(ii) 8 MHz maximum authorized bandwidth channels.

| Transmit (or receive) (MHz) | Receive (or transmit) (MHz) |
|-----------------------------|-----------------------------|
| 6430.0..... | 6480.0 |
| 6438.0..... | 6488.0 |
| 6446.0..... | 6596.0 |
| 6455.0..... | 6505.0 |
| 6463.0..... | 6513.0 |
| 6471.0..... | 6521.0 |

(iii) 25 MHz maximum authorized bandwidth channels.

| Transmit (or receive) (MHz) | Receive (or transmit) (MHz) |
|-----------------------------|-----------------------------|
| 6437.5..... | 6487.5 |
| 6462.5..... | 6512.5 |

(6) *1990-2110 MHz -- Mobile only.* (i) Use of this spectrum for direct delivery of video programs to the general public or multi-channel cable distribution is not permitted. This band is co-equally shared with stations licensed pursuant to parts 74 and 101 of the Commission's Rules. (Common carriers may use this band pursuant to provisions of §101.803(b)). The following channeling plan applies subject to the provisions of §74.604.

Frequency Band (MHz)

1990-2008

2008-2025

2025-2042

2042-2059

2059-2076

2076-2093

2093-2110

(ii) After a licensee has been relocated in accordance with the provisions of §78.40, operations will be in the band 2025-2110 MHz. The following channel plan will apply, subject to the provisions of §74.604 of this chapter:

Frequency Band (MHz)

2025-2037.4

2037.4-2049.5

2049.5-2061.6

2061.6-2073.7

2073.7-2085.8

2085.8-2097.9

2097.9-2110

(7) 6875-7125 MHz -- *Mobile only*. Use of this spectrum for direct delivery of video programs to the general public or multi-channel cable distribution is not permitted. This band is co-equally shared with stations licensed pursuant to parts 74 and 101 of the Commission's Rules. (Common carriers may use this band pursuant to provisions of §101.803(b)). The following channeling plan applies subject to the provisions of §74.604.

Frequency Band (MHz)

6875 – 6900

6900 – 6925

6925 – 6950

6950 – 6975

6975 – 7000

7000 – 7025

7025 – 7050

7050 – 7075

7075 – 7100

7100 – 7125

(b) Television Auxiliary Broadcast Service stations may be assigned channels in the band 12.70-13.20 GHz subject to the condition that no harmful interference is caused to fixed CARS stations authorized at the time of such grants. Translator Relay stations are assigned on a secondary basis. New CARS stations shall not cause harmful interference to television STL and intercity relay stations authorized at the time of such grants. Television pickup stations and CARS pickup stations will be assigned channels in the band on a co-equal basis subject to the conditions that they accept interference from and cause no interference to existing or subsequently authorized

television STL, television intercity relay, or fixed CARS stations. Channels in the 13.150-13.200 GHz band will be assigned exclusively to television pickup and CARS pickup stations on a co-equal basis. A cable television system operator will normally be limited in any one area to the assignment of not more than three channels for CARS pickup use: *Provided, however*, That additional channels may be assigned upon a satisfactory showing that additional channels are necessary and are available.

(c) An application for a CARS station shall be specific with regard to the channel or channels requested. Channels shall be identified by the appropriate designations set forth in paragraph (a) of this section.

(d) For CARS Fixed stations using FM transmission with an authorized bandwidth per channel of 25 MHz, to conserve spectrum applicants are encouraged to use alternate A and B channels such that adjacent R.F. carriers are spaced 12.5 MHz. As example, a fixed station in the CARS, relaying several channels, would use A01, B01, A02, B02, A03, etc.

(e) For CARS stations using vestigial sideband AM transmissions, channels from only the Groups C, D, E or F and those frequencies listed in paragraph (a)(4)(ii) of this section normally will be assigned a station, although upon adequate showing variations in the use of channels in Groups C, D, E or F and those frequencies listed in paragraph (a)(4)(ii) of this section may be authorized on a case-by-case basis in order to avoid potential interference or to permit a more efficient use. In situations where the number or the arrangement of channels available in these groups is not adequate, or in order to avoid potential interference, or in order to achieve the required VHF channelization arrangement on the cable television system or for repeated operations, or for two way transmission, or upon the showing of other good cause, the use of channels in the Groups C, D, E or F and those frequencies listed in paragraph (a)(4)(ii) of this section may be authorized. Applicants are encouraged to apply for adjacent channels within each group of channels, except that different channel arrangements may be authorized when required to conform to the required channelization arrangement at VHF on the cable television system, when it is necessary to transmit non-adjacent off-the-air channels or signals intended to fill non-adjacent slots in the spectrum, or to avoid potential interference, or upon other showing of good cause.

(f) For vestigial sideband AM transmission, the assigned visual carrier frequency for each channel listed in Groups C, D, E or F and those frequencies listed in paragraph (a)(4)(ii) of this section shall be 1.25 MHz above the lower channel-edge frequency. The center frequency for the accompanying FM aural carrier in each channel shall be 4.5 MHz above the corresponding visual carrier frequency.

(g) For CARS stations using double sideband AM transmission or FM transmission with authorized bandwidth of no more than 12.5 MHz, Group K channels normally will be assigned to a station, although upon adequate showing variations in the use of channels in Group K may be authorized on a case-by-case basis in order to avoid potential interference or to permit a more efficient use.

(h) For double sideband AM transmission, the assigned carrier frequency for each channel listed in Group K shall be 6.25 MHz above the lower boundary frequency for each channel, and the sideband frequencies corresponding to the carrier frequency of the accompanying FM aural signal shall be 4.5 MHz above and below the visual carrier frequency.

(i) All stations shall employ no more than a 12.5 MHz authorized bandwidth per channel except in any one or more of the following circumstances:

- (1) The station is a CARS pickup station;
- (2) The transmission path is more than 16.1 km (10 miles) in length;
- (3) The station was authorized or an application was on file therefor prior to July 26, 1973.

- (4) Other good cause has been shown that use of a bandwidth of 12.5 MHz or less per channel would be inefficient, impractical, or otherwise contrary to the public interest.
- (j) Should any conflict arise among applications for stations in this band, priority will be based on the filing date of an application completed in accordance with the instructions thereon.
- (k) Applicants for Group K channels shall apply for adjacent channels and the requested channels shall overlap the least possible number of Group A channels, except that different channel arrangements may be authorized upon an adequate showing that the foregoing arrangement cannot be used or would be contrary to the public interest, or in order to avoid potential interference or to permit a more efficient use.
- (l) The band 13.15-13.20 GHz is reserved exclusively for the assignment of CARS Pickup and Television Pickup stations on a co-equal basis within a 50 km radius of each of the 100 television markets delineated in §76.51. Fixed Television Auxiliary stations licensed pursuant to applications accepted for filing before September 1, 1979, may continue operation on channels in the 13.15-13.20 GHz band, subject to periodic license renewals.
- (m) CARS stations may be authorized use of the band from 13.20 to 13.25 GHz on a secondary basis to Television Broadcast Auxiliary Stations. Any CARS application seeking authorization for use of the 13.20 to 13.25 GHz band must demonstrate that the applicant has exhausted all spectrum available to it in the 12.70 to 13.20 GHz band. Applications for use of this band must specify whether the channels are 6 MHz, 12.5 MHz, or 25 MHz wide and give the upper and lower boundaries and the polarization for each channel.

[37 FR 3292, Feb. 12, 1972. Redesignated at 37 FR 15926, Aug. 8, 1972]

Editorial Note: For FEDERAL REGISTER citations affecting §78.18, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and on GPO Access.

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§78.19 Interference.

- (a) Applications for CARS stations shall endeavor to select an assignable frequency or frequencies which will be least likely to result in interference to other licensees in the same area since the FCC itself does not undertake frequency coordination.
- (b) Applicants for CARS stations shall take full advantage of all known techniques, such as the geometric arrangement of transmitters and receivers, the use of minimum power required to provide the needed service, and the use of highly directive transmitting and receiving antenna systems, to prevent interference to the reception of television STL, television intercity relay, and other CARS stations.
- (c)(1) *Radio Astronomy and Radio Research Installations.* In order to minimize harmful interference at the National Radio Astronomy Observatory site located at Green Bank, Pocahontas County, W. Va., and at the Naval Radio Research Observatory at Sugar Grove, Pendleton County, W. Va., an applicant for authority to construct a CARS station, except a CARS pickup station, or for authority to make changes in the frequency, power, antenna height, or antenna directivity of an existing station within the area bounded by 39°15' N. on the north, 78°30' W. on the east, 37°30' N. on the south and 80°30' W. on the west shall, at the time of filing such application with the Commission, simultaneously notify the Director, National Radio Astronomy Observatory, Post Office Box No. 2, Green Bank, WV 24944, in writing, of the technical particulars of the proposed station. Such notification shall include the geographical coordinates of the antenna, antenna height, antenna directivity if any, proposed frequency, type of emission, and power. In addition, the applicant shall

indicate in his application to the Commission the date notification was made to the Observatory. After receipt of such application, the Commission will allow a period of 20 days for comments or objections in response to the notifications indicated. If an objection to the proposed operation is received during the 20-day period from the National Radio Astronomy Observatory for itself or on behalf of the Naval Radio Research Observatory, the Commission will consider all aspects of the problem and take whatever action is deemed appropriate.

(2) Any applicant for a new permanent base or fixed station authorization to be located on the islands of Puerto Rico, Desecheo, Mona, Vieques, and Culebra, or for a modification of an existing authorization which would change the frequency, power, antenna height, directivity, or location of a station on these islands and would increase the likelihood of the authorized facility causing interference, shall notify the Interference Office, Arecibo Observatory, Post Office Box 995, Arecibo, Puerto Rico 00613, in writing or electronically, of the technical parameters of the proposal. Applicants may wish to consult interference guidelines, which will be provided by Cornell University. Applicants who choose to transmit information electronically should e-mail to: prcz@naic.edu

(i) The notification to the Interference Office, Arecibo Observatory shall be made prior to, or simultaneously with, the filing of the application with the Commission. The notification shall state the geographical coordinates of the transmit antenna (NAD-83 datum), antenna height above ground, ground elevation at the antenna, antenna directivity and gain, proposed frequency and FCC Rule Part, type of emission, effective isotropic radiated power, and whether the proposed use is itinerant. Generally, submission of the information in the technical portion of the FCC license application is adequate notification. In addition, the applicant shall indicate in its application to the Commission the date notification was made to the Arecibo Observatory.

(ii) After receipt of such applications, the Commission will allow the Arecibo Observatory a period of 20 days for comments or objections in response to the notification indicated. The applicant will be required to make reasonable efforts in order to resolve or mitigate any potential interference problem with the Arecibo Observatory and to file either an amendment to the application or a modification application, as appropriate. If the Commission determines that an applicant has satisfied its responsibility to make reasonable efforts to protect the Observatory from interference, its application may be granted.

(iii) The provisions of this paragraph do not apply to operations that transmit on frequencies above 15 GHz.

(d) Protection for Table Mountain Radio Receiving Zone, Boulder County, Colorado: Applicants for a station authorization to operate in the vicinity of Boulder County, Colorado under this part are advised to give due consideration, prior to filing applications, to the need to protect the Table Mountain Radio Receiving Zone from harmful interference. These are the research laboratories of the Department of Commerce, Boulder County, Colorado. To prevent degradation of the present ambient radio signal level at the site, the Department of Commerce seeks to ensure that the field strengths of any radiated signals (excluding reflected signals) received on this 1800 acre site (in the vicinity of coordinates 40°07'±50"±sec N Latitude, 105°14'±40"±sec W Longitude) resulting from new assignments (other than mobile stations) or from the modification or relocation of existing facilities do not exceed the following values:

| Frequency range | In authorized bandwidth of service | |
|--------------------|---------------------------------------|--|
| | Field strength (mV/m) | Power flux density\1\ (dBW/m\2\) |
| Below 540 kHz..... | 10 | -65.8 |

| | | |
|----------------------|----|-----------|
| 540 to 1600 kHz..... | 20 | -59.8 |
| 1.6 to 470 MHz..... | 10 | \2\ -65.8 |
| 470 to 890 MHz..... | 30 | \2\ -56.2 |
| Above 890 MHz..... | 1 | \2\ -85.8 |

\1\ Equivalent values of power flux density are calculated assuming free space characteristic impedance of 376.7=120p ohms.

\2\ Space stations shall conform to the power flux density limits at the earth's surface specified in appropriate parts of the FCC rules, but in no case should exceed the above levels in any 4 kHz band for all angles of arrival.

(1) Advance consultation is recommended particularly for those applicants who have no reliable data which indicates whether the field strength or power flux density figures in the above table would be exceeded by their proposed radio facilities (except mobile stations). In such instances, the following is a suggested guide for determining whether coordination is recommended:

(i) All stations within 2.4 km (1.5 statute miles);

(ii) Stations within 4.8 km (3 statute miles) with 50 watts or more effective radiated power (ERP) in the primary plane of polarization in the azimuthal direction of the Table Mountain Radio Receiving Zone;

(iii) Stations within 16 km (10 statute miles) with 1 kW or more ERP in the primary plane of polarization in the azimuthal direction of the Table Mountain Radio Receiving Zone;

(iv) Stations within 80 km (50 statute miles) with 25 kW or more ERP in the primary plane of polarization in the azimuthal direction of the Table Mountain Radio Receiving Zone.

(2) Applicants concerned are urged to communicate with the Radio Frequency Management Coordinator, Department of Commerce, Research Support Services, NOAA R/E5X2, Boulder Laboratories, Boulder, CO 80303; telephone (303) 497-6548, in advance of filing their applications with the Commission.

(3) The Commission will not screen applications to determine whether advance consultation has taken place. However, applicants are advised that such consultation can avoid objections from the Department of Commerce or proceedings to modify any authorization which may be granted which, in fact, delivers a signal at the site in excess of the field strength specified herein.

(e) Protection for Federal Communications Commission monitoring stations:

(1) Applicants in the vicinity of an FCC monitoring station for a radio station authorization to operate new transmitting facilities or changed transmitting facilities which would increase the field strength produced over the monitoring station over that previously authorized are advised to give consideration, prior to filing applications, to the possible need to protect the FCC stations from harmful interference. Geographical coordinates of the facilities which require protection are listed in §0.121(c) of the Commission's Rules. Applications for stations (except mobile stations) which will produce on any frequency a direct wave fundamental field strength of *greater than 10 mV/m* in the authorized bandwidth of service (-65.8 dBW/m² power flux density assuming a free space characteristic impedance of 120 ohms) at the referenced coordinates, may be examined to determine extent of possible interference. Depending on the theoretical field strength value and existing root-sum-square or other ambient radio field signal levels at the indicated coordinates, a clause protecting the monitoring station may be added to the station authorization.

(2) In the event that calculated value of expected field exceeds 10 mV/m (-65.8 dBW/m²) at the reference coordinates, or if there is any question whether field strength levels might exceed the threshold value, advance consultation with the FCC to discuss any protection necessary should be considered. Prospective applicants may communicate with: Chief, Compliance and Information Bureau, Federal Communications Commission, Washington, D.C. 20554, Telephone (202) 632-6980.

(3) Advance consultation is suggested particularly for those applicants who have no reliable data which indicates whether the field strength or power flux density figure indicated would be exceeded by their proposed radio facilities (except mobile stations). In such instances, the following is a suggested guide for determining whether an applicant should coordinate:

(i) All stations within 2.4 kilometers (1.5 statute miles);

(ii) Stations within 4.8 kilometers (3 statute miles) with 50 watts or more average effective radiated power (ERP) in the primary plane of polarization in the azimuthal direction of the Monitoring Stations.

(iii) Stations within 16 kilometers (10 statute miles) with 1 kW or more average ERP in the primary plane of polarization in the azimuthal direction of the Monitoring Station;

(iv) Stations within 80 kilometers (50 statute miles) with 25 kW or more average ERP in the primary plane of polarization in the azimuthal direction of the Monitoring Station;

(4) Advance coordination for stations operating above 1000 MHz is recommended only where the proposed station is in the vicinity of a monitoring station designated as a satellite monitoring facility in section 0.121(c) of the Commission's Rules and also meets the criteria outlined in paragraphs (f)(2) and (3) of this section .

(5) The Commission will not screen applications to determine whether advance consultation has taken place. However, applicants are advised that such consultation can avoid objections from the Federal Communications Commission or modification of any authorization which will cause harmful interference.

(f) Protection to the Federal Government's receive earth station operations in the Denver, Colorado and Washington D.C. areas in the 17,800 to 19,700 MHz band.

(1) With the exception of applicants for a station authorization to operate within a 5 km radius of 39°40'23" N Lat. and 105°13'03" W Long (Morrison, CO), applicants will not be authorized to operate within a 50 km radius of 39°43'00" N Lat. and 104°46'00" W Long. (Denver, CO) and within a 50 km radius of 38°48'00" N Lat. and 76°52'00" W Long. (Washington, DC).

(2) To minimize or avoid harmful interference to Government Satellite Earth Stations located in the Denver, Colorado and Washington, DC areas, any application for a new station license to operate in the 17.8-19.7 GHz band, or for modification of an existing station license in this band which would change the frequency, power, emission, modulation, polarization, antenna height or directivity, or location of such a station, must be coordinated with the Federal Government by the Commission before an authorization will be issued, if the station or proposed station is located in whole or in part within any of the areas defined by the following rectangles or circles:

(i) A circular area within a 5 km radius of 39°40'23" N Lat. and 105°13'03" W Long. (Morrison, CO)

(ii) Within the rectangular areas defined as follows (vicinity of Denver, CO):

Rectangle 1:

414°30'00" N. Lat. on the north

103°10'00" W. Long. on the east

38°30'00" N. Lat. on the south

106°30'00" W. Long. on the west

Rectangle 2:

38°30'00" N. Lat. on the north

105°00'00" W. Long. on the east

37°30'00" N. Lat. on the south

105°50'00" W. Long. on the west

Rectangle 3:

40°08'00" N. Lat. on the north

107°00'00" W. Long. on the east

39°56'00" N. Lat. on the south

107°15'00" W. Long. on the west

(iii) Within the rectangle and circle areas as follows (vicinity of Washington, DC):

Rectangle

38°40'00" N. Lat. on the north

78°50'00" W. Long. on the east

38°10'00" N. Lat. on the south

79°20'00" W. Long. on the west or

or

(iv) Within a radius of 178 km of 38°48'00" N. Lat. / 76°52'00" W. Long.

Note to §78.19: The coordinates cited in this section are specified in terms of the "North American Datum of 1983 (NAD 83)" with an accuracy of -30 meters with respect to the "National Spatial Reference System."

[37 FR 3292, Feb. 12, 1972, as amended at 37 FR 15926, Aug. 8, 1972; 37 FR 26733, Dec. 15, 1972; 38 FR 1920, Jan. 19, 1973; 42 FR 33037, June 29, 1977; 44 FR 77167, Dec. 31, 1979; 45 FR 78694, Nov. 26, 1980; 50 FR 32418, Aug. 12, 1985; 50 FR 40863, Oct. 7, 1985; 50 FR 45406, Oct. 31, 1985; 58 FR 44952, Aug. 25, 1993; 61 FR 8478, Mar. 5, 1996; 62 FR 55533, 55538, Oct. 27, 1997]

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§78.20 Acceptance of applications; public notice.

(a) Applications which are tendered for filing in Washington, DC, are dated upon receipt and then forwarded to the Media Bureau where an administrative examination is made to ascertain whether the applications are complete. Applications found to be complete or substantially complete, are accepted for filing and are given a file number. In case of minor defects as to completeness, the applicant will be required to supply the missing information. Applications which are not substantially complete will be returned to the applicant. Applications requiring fees as set forth at part 1, subpart G, of this chapter must be filed in accordance with §0.401(b) of this chapter.

(b) Acceptance of an application for filing means only that it has been the subject of a preliminary review by the Commission's administrative staff as to completeness. Applications which are determined to be clearly not in accordance with the Commission's rules or other requirements, unless accompanied by an appropriate request for waiver, will be considered defective and will not be accepted for filing, or if inadvertently accepted for filing, will be dismissed. Requests for waiver shall show the nature of the waiver or exception desired and shall set forth the reasons in support thereof.

(c) The Commission will give public notice of all applications and major amendments thereto which have been accepted for filing. No application shall be acted on less than thirty (30) days from the date of public notice.

[37 FR 15926, Aug. 8, 1972, as amended at 52 FR 10231, Mar. 31, 1987; 67 FR 13235, Mar. 21, 2002]

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§78.21 Dismissal of applications.

(a) Any application may, on request of the applicant, be dismissed without prejudice as a matter of right prior to the adoption date of any final action taken by the Commission with respect to the application. An applicant's request for the return of an application will be regarded as a request for dismissal.

(b) Failure to prosecute an application, or failure to respond to official correspondence or request for additional information, will be cause for dismissal. Such dismissal will be without prejudice if it occurs prior to the adoption date of any final action taken by the Commission with respect to the application.

[37 FR 15927, Aug. 8, 1972]

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§78.22 Objections to applications.

(a) Any party in interest may file a petition to deny any application (whether as originally filed or as amended) no later than thirty (30) days after issuance of a public notice of the acceptance for filing of any such application or amendment thereto. Petitions to deny shall contain specific allegations of fact sufficient to show that the petitioner is a party in interest and that a grant of the application would be prima facie inconsistent with the public interest, convenience, and necessity. Such allegations of fact shall, except for those of which official notice may be taken, be supported by affidavit of a person or persons with personal knowledge thereof.

(b) The applicant may file an opposition to any petition to deny, and the petitioner may file a reply to such opposition (see §1.45 of this chapter), in which allegations of fact or denials thereof shall be supported by affidavit of a person or persons with personal knowledge thereof.

(c) Notwithstanding the provisions of paragraph (a) of this section, before Commission action on any application for an instrument of authorization, any person may file informal objections to the grant. Such objections may be submitted in letter form (without extra copies) and shall be signed by the objector. The limitation on pleadings and time for filing pleadings provided for in §1.45 of this chapter shall not be applicable to any objections duly filed pursuant to this paragraph.

[37 FR 15927, Aug. 8, 1972, as amended at 50 FR 23421, June 4, 1985]

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§78.23 Equipment tests.

(a) Following the grant of a CARS license, the licensee, during the process of construction of the station, may, without further authority from the Commission, conduct equipment tests for the purpose of such adjustments and measurements as may be necessary to assure compliance with the terms of the authorization, the technical provisions of the application therefore, the rules and regulations, and the applicable engineering standards.

(b) The Commission may notify the licensee to conduct no tests or may cancel, suspend, or change the date for the beginning of equipment tests as and when such action may appear to be in the public interest, convenience, and necessity.

(c) The test authorized in this section shall be conducted only as a necessary part of construction.

[50 FR 23421, June 4, 1985]

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§78.27 License conditions.

(a) Authorizations (including initial grants, modifications, assignments or transfers of control, and renewals) in the Cable Television Relay Service to serve cable television systems and other eligible systems, shall contain the condition that cable television systems shall operate in compliance with the provisions of part 76 (Cable Television Service) of this chapter and that other eligible systems shall operate in compliance with the provisions of part 21 and part 74 of this chapter.

(b) CARS stations licensed under this subpart are required to commence operation within one year of the date of the license grant.

(1) The licensee of a CARS station shall notify the Commission in writing when the station commences operation. Such notification shall be submitted on or before the last day of the authorized one year construction period; otherwise, the station license shall be automatically forfeited.

(2) CARS licensees needing additional time to complete construction of the station and commence operation shall request an extension of time 30 days before the expiration of the one year construction period. Exceptions to the 30-day advance filing requirement may be granted where unanticipated delays occur.

[50 FR 23421, June 4, 1985, as amended at 55 FR 46015, Oct. 31, 1990]

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§78.29 License period.

Licenses for CARS stations will be issued for a period not to exceed five (5) years. On and after February 1, 1966, licenses for CARS stations ordinarily will be issued for a period expiring on February 1, 1971, and, when regularly renewed, at 5-year intervals thereafter. When a license is granted subsequent to the last renewal date for CARS stations, the license will be issued only for the unexpired period of the current license term of such stations. The license renewal date applicable to CARS stations may be varied as necessary to permit the orderly processing of renewal applications, and individual station licenses may be granted or renewed for a shorter period of time than that generally prescribed for CARS stations, if the Commission finds that the public interest, convenience, and necessity would be served by such action.

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§78.31 Temporary extension of license.

Where there is pending before the Commission any application, investigation, or proceeding which, after hearing, might lead to or make necessary the modification of, revocation of or the refusal to renew an existing cable television relay station license, the Commission will grant a temporary extension of such license: *Provided, however,* That no such temporary extension shall be construed as a finding by the Commission that the operation of any CARS station thereunder will serve the public interest, convenience, and necessity beyond the express terms of such temporary extension of license: *And provided, further,* That such temporary extension of license will in no wise affect or limit the action of the Commission with respect to any pending application or proceeding.

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§78.33 Special temporary authority.

(a) Notwithstanding the requirements of §§78.15 and 78.20, in circumstances requiring immediate or temporary use of facilities, a request may be made for special temporary authority to install and operate new equipment or to operate licensed equipment in a manner different from that authorized in a station license. Any such request may be in letter form, and shall be submitted in duplicate: *Provided, however,* That in cases of emergency involving danger to life or property or due to damage to equipment, such request may be made by telephone or telegraph with the understanding that a written request shall be submitted within ten (10) days thereafter.

(b) Special temporary authority may also be requested to conduct a field survey to determine necessary data in connection with the preparation of a formal application for installation of a radio system under this part. Such authority may be granted to equipment suppliers and others who are not operators of cable television systems or other eligible systems, as well as to cable operators or other eligible system operators, to conduct equipment, program, service, and path tests.

(c) Any request for special temporary authority shall be clear and complete within itself as to the authority requested. In addition, such requests shall contain the following information:

- (1) Name, address, and citizenship of applicant;
 - (2) Grounds for special action, including a description of any emergency or damage to equipment;
 - (3) Type of operation to be conducted;
 - (4) Purpose of operation;
 - (5) Time and date of proposed operation;
 - (6) Class of station and nature of service;
 - (7) Location of station;
 - (8) Equipment to be used, specifying manufacturer, model number, and number of units;
 - (9) Frequency or frequencies desired, consistent with §78.18: *Provided, however*, That in the case of events of widespread interest and importance that cannot be transmitted successfully on these frequencies, frequencies assigned to other services may be requested on a showing that operation thereon will not cause interference to established stations: *And provided, further*, That in no case will a cable television relay service operation be authorized on frequencies employed for the safety of life and property;
 - (10) Plate power input to final radio frequency stage;
 - (11) Type of emission;
 - (12) Description of antenna to be used, including height. In the event that the proposed antenna installations will increase the height of any natural formation, or existing manmade structure, by more than 6.1 meters (20 feet), a vertical plan sketch showing the height of the structures proposed to be erected, the height above ground of any existing structure, the elevation of the site above mean sea level, and the geographic coordinates of the proposed sites shall be submitted with the application.
- (d) Except in emergencies involving safety of life or property or due to damage to equipment, a request for special temporary authority shall be filed at least ten (10) days prior to the date of proposed operation, or shall be accompanied by a statement of reasons for the delay in submitting such request.
- (e) If the Commission finds that special temporary authority is in the public interest, it may grant such authority for a period not exceeding ninety (90) days, and, on a like finding, may extend such authority for one additional period not to exceed ninety (90) days.

[37 FR 15927, Aug. 8, 1972, as amended at 55 FR 46015, Oct. 31, 1990; 58 FR 44952, Aug. 25, 1993]

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§78.35 Assignment or transfer of control.

(a) No assignment of the license of a cable television relay station or transfer of control of a CARS licensee shall occur without prior FCC authorization.

(b) If an assignment or transfer of control does not involve a substantial change of interests, the provisions of §§78.20(c) and 78.22, concerning public notice and objections, shall be waived.

(c) Licensees of CARS stations are not required to submit applications for assignment or transfer of control or otherwise notify the FCC in cases where the change in ownership does not affect the identity or controlling interest of the licensee.

[37 FR 15927, Aug. 8, 1972, as amended at 50 FR 23421, June 4, 1985]

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§78.36 Frequency coordination.

Coordination of fixed and mobile assignments will be in accordance with the procedure established in §101.103(d) of this chapter.

[67 FR 43263, June 27, 2002]

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§78.40 Transition of the 1990-2025 MHz band from the Cable Television Relay Service to emerging technologies.

(a) Licensees proposing to implement Mobile-Satellite Services using emerging technologies (MSS Licensees) may negotiate with Cable Television Relay Service licensees (Existing Licensees) in the 1990-2110 MHz band for the purpose of agreeing to terms under which the Existing Licensees would relocate their operations to the 2025-2110 MHz band, to other authorized bands, or to other media; or alternatively, would accept a sharing arrangement with the MSS Licensee that may result in an otherwise impermissible level of interference to the Existing Licensee's operations.

(b) Existing Licensees in the 1990-2025 MHz band allocated for licensed emerging technology services will maintain primary status in these bands until an MSS Licensee completes relocation of the Existing Licensee's operations.

(c) The Commission will amend the operating license of the Existing Licensee to secondary status only if the following requirements are met:

(1) The service applicant, provider, licensee, or representative using an emerging technology guarantees payment of all relocation costs, including all engineering, equipment, site and FCC fees, as well as any reasonable additional costs that the relocated Existing Licensee might incur as a result of operation in another authorized band or migration to another medium;

(2) The MSS Licensee completes all activities necessary for implementing the replacement facilities, including engineering and cost analysis of the relocation procedure and, if radio facilities are used, identifying and obtaining, on the incumbents' behalf, new microwave or Local Television Transmission frequencies and frequency coordination; and

(3) The MSS Licensee builds the replacement system and tests it for comparability with the existing system.

- (d) The Existing Licensee is not required to relocate until the alternative facilities are available to it for a reasonable time to make adjustments, determine comparability, and ensure a seamless handoff.
- (e) If within one year after the relocation to new facilities the Existing Licensee demonstrates that the new facilities are not comparable to the former facilities, the MSS Licensee must remedy the defect.
- (f) Subject to the terms of this paragraph (f), Phase I of the relocation of Existing Licensees will be carried out in the following manner:
- (1) Beginning September 6, 2000, Existing Licensees and MSS Licensees may negotiate individually or collectively for relocation of Existing Licensees to one of the channel plans specified in §74.602(a)(3) of this chapter. Parties may not decline to negotiate, though Existing Licensees may decline to be relocated. MSS Licensees must relocate all Existing Licensees in Nielsen Designated Market Areas 1-30 prior to beginning operations, except those Existing Licensees that decline relocation. If the parties are unable to reach a negotiated agreement, MSS Licensees may involuntarily relocate Existing Licensees after two years. As of the date that any MSS Licensee announces the beginning of operations in the 1990-2008 MHz band, licensees who are not on the new channel plan specified in §74.602(a)(3) of this chapter must discontinue use of Channel A01 (1990-2008 MHz).
- (2) Before negotiating with MSS Licensees, Existing Licensees in Nielsen Designated Market Areas where there is a BAS frequency coordinator must coordinate and select a band plan for the market area. Thereafter, all negotiations must produce solutions that adhere to the market area's band plan.
- (3) After the date the first MSS Licensee begins operations, MSS Licensees must relocate Existing Licensees in Nielsen Designated Market Areas 31-100 within three years, unless any Existing Licensee declines relocation.
- (4) Beginning on the date any MSS Licensee announces in writing to Existing Licensees its intention to begin operations in the 2008-2025 MHz band, Existing Licensees and MSS Licensees may negotiate individually or collectively for relocation of Existing Licensees to one of the channel plans specified in §74.602(a)(4) of this chapter. MSS Licensees must relocate all Existing Licensees in Nielsen Designated Market Areas 1-30 prior to beginning operations, except those Existing Licensees that decline relocation. If the parties are unable to reach a negotiated agreement, MSS Licensees may involuntarily relocate Existing Licensees after two years. As of the date that any MSS Licensee announces its intention to begin operations in the 2008-2025 MHz band, licensees who are not on the new channel plan specified in §74.602(a)(4) of this chapter must discontinue use of Channel A01 (2008-2023 MHz).
- (5) After the date the first MSS Licensee begins operations in the 2008-2025 MHz band, MSS Licensees must relocate Existing Licensees in the remaining Nielsen Designated Market Areas within three years.
- (6) Ten years after the date specified in paragraph (f)(1) of this section, all Existing Licensees will become secondary in the 1990-2025 MHz band. Upon written demand by any MSS Licensee, Existing Licensees must cease all operations in the 1990-2025 MHz band within six months.

[65 FR 48181, Aug. 7, 2000]

Subpart C -- General Operating Requirements

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§78.51 Remote control operation.

(a) A CARS station may be operated by remote control: *Provided*, That such operation is conducted in accordance with the conditions listed below: *And provided further*, That the Commission, in Washington, DC, is notified at least 10 days prior to the beginning of such operation and that such notification is accompanied by a detailed description showing the manner of compliance with the following conditions:

(1) The transmitter and associated control system shall be installed and protected in a manner designed to prevent tampering or operation by unauthorized persons.

(2) An operator shall be on duty at the remote control position and in actual charge thereof at all times when the station is in operation.

(3) Facilities shall be provided at the control position which will permit the operator to turn the transmitter on and off at will. The control position shall also be equipped with suitable devices for observing the overall characteristics of the transmissions and a carrier operated device which will give a continuous visual indication whenever the transmitting antenna is radiating a signal. The transmitting apparatus shall be inspected as often as may be necessary to insure proper operation.

(4) The control circuits shall be so designed and installed that short circuits, open circuits, other line faults, or any other cause which would result in loss of control of the transmitter will automatically cause the transmitter to cease radiating.

(b) An application for authority to construct a new station or to make changes in the facilities of an existing station and which proposes operation by remote control shall include an adequate showing of the manner of compliance with the requirements of this section.

(c) The Commission may notify the licensee not to commence remote control operation, or to cancel, suspend, or change the date of the beginning of such operation as and when such action may appear to be in the public interest, convenience, or necessity.

[37 FR 3292, Feb. 12, 1972, as amended at 41 FR 29695, July 19, 1976; 49 FR 20671, May 16, 1984 ; 50 FR 23421, June 4, 1985]

[\[TOP\]](#)

§78.53 Unattended operation.

(a) A CARS station may be operated unattended: *Provided*, That such operation is conducted in accordance with the conditions listed below: *And provided further*, That the Commission, in Washington, DC, is notified at least 10 days prior to the beginning of unattended operation if such operation is not indicated on the station authorization.

(1) The transmitter and associated control circuits shall be installed and protected in a manner designed to prevent tampering or operation by unauthorized persons.

(2) If the transmitting apparatus is located at a site which is not readily accessible at all hours and in all seasons, means shall be provided for turning the transmitter on and off at will from a location which can be reached promptly at all hours and in all seasons.

(3) Personnel responsible for the maintenance of the station shall be available on call at a location which will assure expeditious performance of such technical servicing and maintenance as may be necessary whenever the station is operating. In lieu thereof, arrangements may be made to have a person or persons available at all times when the transmitter is operating, to turn the transmitter off in the event that it is operating improperly. The transmitter may not be restored to operation until the malfunction has been corrected by a technically qualified person.

(4) The station licensee shall be responsible for the proper operation of the station at all times and is expected to provide for observations, servicing and maintenance as often as may be necessary to ensure proper operation. All adjustments or tests during or coincident with the installation, servicing, or maintenance of the station which may affect its operation shall be performed by or under the immediate supervision of a technically qualified person.

(b) The Commission may notify the licensee not to commence unattended operation, or to cancel, suspend, or change the date of the beginning of such operation as and when such action may appear to be in the public interest, convenience, or necessity. (Secs. 1, 2, 301, 307, 48 Stat., as amended 1064, 1081, 1083; (47 U.S.C. 151, 152, 301, 307))

[37 FR 3292, Feb. 12, 1972, as amended at 41 FR 29695, July 19, 1976; 42 FR 61864, Dec. 7, 1977; 43 FR 4617, Feb. 3, 1978; 43 FR 25127, June 9, 1978; 49 FR 20671, May 16, 1984; 50 FR 23422, June 4, 1985; 50 FR 32418, Aug. 12, 1985]

[\[TOP\]](#)

§78.55 Time of operation.

A CARS station is not expected to adhere to any prescribed schedule of operation. Continuous radiation of the carrier without modulation is permitted provided harmful interference is not caused to other authorized stations.

[43 FR 25127, June 9, 1978]

[\[TOP\]](#)

§78.57 Station inspection.

The station and all records required to be kept by the licensee shall be made available for inspection upon request by any authorized representative of the Commission.

[\[TOP\]](#)

§78.59 Posting of station and operator licenses.

(a) The station license and any other instrument of authorization or individual order concerning the construction or the equipment or manner of operation shall be posted at the place where the transmitter is located, so that all terms thereof are visible except as otherwise provided in paragraphs (b) and (c) of this section.

(b) In cases where the transmitter is operated by remote control, the documents referred to in paragraph (a) of this section shall be posted in the manner described at the control point of the transmitter.

(c) In cases where the transmitter is operated unattended, the name of the licensee and the call sign of the unattended station shall be displayed at the transmitter site on the structure supporting the transmitting antenna, so as to be visible to a person standing on the ground at the transmitter site. The display shall be prepared so as to

withstand normal weathering for a reasonable period of time and shall be maintained in a legible condition at all times by the licensee. The station license and other documents referred to in paragraph (a) of this section shall be kept at the nearest attended station or, in cases where the licensee of the unattended station does not operate attended stations, at the point of destination of the signals relayed by the unattended station.

[37 FR 3292, Feb. 12, 1972, as amended at 49 FR 20671, May 16, 1984]

[\[TOP\]](#)

§78.61 Operator requirements.

(a) Except in cases where a CARS station is operated unattended in accordance with §78.53 or except as provided in other paragraphs of this section, a person shall be on duty at the place where the transmitting apparatus is located, in plain view and in actual charge of its operation or at a remote control point established pursuant to the provision of §78.51, at all times when the station is in operation. Control and monitoring equipment at a remote control point shall be readily accessible and clearly visible to the operator at that position.

(b) Any transmitter tests, adjustments, or repairs during or coincident with the installation, servicing, operation or maintenance of a CARS station which may affect the proper operation of such station shall be made by or under the immediate supervision and responsibility of a person responsible for proper functioning of the station equipment.

(c) The operator on duty and in charge of a CARS station may, at the discretion of the licensee, be employed for other duties or for the operation of another station or stations in accordance with the rules governing such stations. However, such duties shall in no way impair or impede the required supervision of the CARS station.

(d) CARS stations operating with nominal transmitter power of 250 milliwatts or less may be operated by any person whom the licensee shall designate. Pursuant to this provision, the designated person shall perform as the licensee's agent and proper operation of the station shall remain the licensee's responsibility.

(e) Mobile CARS stations operating with nominal transmitter power in excess of 250 milliwatts may be operated by any person whom the licensee shall designate: Provided that a person is on duty at a receiving end of the circuit to supervise operation and to immediately institute measures sufficient to assure prompt correction of any condition of improper operation that may be observed. (Secs. 1, 2, 301, 307, 48 Stat., as amended, 1064, 1081, 1083; (47 U.S.C. 151, 152, 301, 307))

[43 FR 4617, Feb. 3, 1978, as amended at 49 FR 20671, May 16, 1984; 50 FR 32418, Aug. 12, 1985]

[\[TOP\]](#)

§78.63 Antenna structure marking and lighting.

The owner of each antenna structure is responsible for ensuring that the structure, if required, is painted and/or illuminated in accordance with part 17 of this chapter. In the event of default by the owner, each licensee shall be responsible for ensuring that the structure complies with applicable painting and lighting requirements.

[61 FR 4368, Feb. 6, 1996]

[\[TOP\]](#)

§78.65 Additional orders.

In case the rules of this part do not cover all phases of operation with respect to external effects, the Commission may make supplemental or additional orders in each case as may be deemed necessary.

[\[TOP\]](#)

§78.67 Copies of rules.

The licensee of a CARS station shall have a current copy of this part 78, and, in cases where aeronautical obstruction marking of antennas is required, part 17 of this chapter shall be available for use by the operator in charge. Both the licensee and the operator or operators responsible for the proper operation of the station are expected to be familiar with the rules governing CARS stations. Copies of the Commission's rules may be obtained from the Superintendent of Documents, Government Printing Office, Washington, DC 20402, at nominal cost.

[\[TOP\]](#)

§78.69 Station records.

Each licensee of a CARS station shall maintain records showing the following:

- (a) For all attended or remotely controlled stations, the date and time of the beginning and end of each period of transmission of each channel;
- (b) For all stations, the date and time of any unscheduled interruptions to the transmissions of the station, the duration of such interruptions, and the causes thereof;
- (c) For all stations, the results and dates of the frequency measurements made pursuant to §78.113 and the name of the person or persons making the measurements;
- (d) For all stations, when service or maintenance duties are performed, which may affect a station's proper operation, the responsible operator shall sign and date an entry in the station's records, giving:
 - (1) Pertinent details of all transmitter adjustments performed by the operator or under the operator's supervision.
- (e) When a station in this service has an antenna structure which is required to be illuminated, appropriate entries shall be made as follows:
 - (1) The time the tower lights are turned on and off each day, if manually controlled.
 - (2) The time the daily check of proper operation of the tower lights was made, if an automatic alarm system is not employed.
 - (3) In the event of any observed or otherwise known failure of a tower light:
 - (i) Nature of such failure.
 - (ii) Date and time the failure was observed or otherwise noted.

- (iii) Date, time, and nature of the adjustments, repairs, or replacements made.
 - (iv) Identification of Flight Service Station (Federal Aviation Administration) notified of the failure of any code or rotating beacon light not corrected within 30 minutes, and the date and time such notice was given.
 - (v) Date and time notice was given to the Flight Service Station (Federal Aviation Administration) that the required illumination was resumed.
- (4) Upon completion of the 3-month periodic inspection required by §78.63(c):
- (i) The date of the inspection and the condition of all tower lights and associated tower lighting control devices, indicators, and alarm systems.
 - (ii) Any adjustments, replacements, or repairs made to insure compliance with the lighting requirements and the date such adjustments, replacements, or repairs were made.
 - (f) For all stations, station record entries shall be made in an orderly and legible manner by the person or persons competent to do so, having actual knowledge of the facts required, who shall sign the station record when starting duty and again when going off duty.
 - (g) For all stations, no station record or portion thereof shall be erased, obliterated, or willfully destroyed within the period of retention required by rule. Any necessary correction may be made only by the person who made the original entry who shall strike out the erroneous portion, initial the correction made, and show the date the correction was made.
 - (h) For all stations, station records shall be retained for a period of not less than 2 years. The Commission reserves the right to order retention of station records for a longer period of time. In cases where the licensee or permittee has notice of any claim or complaint, the station record shall be retained until such claim or complaint has been fully satisfied or until the same has been barred by statute limiting the time for filing of suits upon such claims.

[41 FR 29695, July 19, 1976, as amended at 49 FR 20672, May 16, 1984; 50 FR 23422, June 4, 1985]

[\[TOP\]](#)

§78.75 Equal employment opportunities.

See Subpart E, Part 76 of this chapter.

[51 FR 9966, Mar. 24, 1986]

Subpart D -- Technical Regulations

[\[TOP\]](#)

§78.101 Power limitations.

(a) On any authorized frequency, the average power delivered to an antenna shall be the minimum amount of power necessary to carry out the communications desired. In no event shall the average transmitter power or equivalent isotropically radiated power (EIRP) exceed the values specified below.

| Maximum allowable EIRP | | Maximum allowable transmitter power | |
|------------------------|--------------|-------------------------------------|------------|
| Frequency band (MHz) | | Fixed (W) | Mobile (W) |
| Fixed (dBW) | Mobile (dBW) | | |
| 2,025 to 2,110..... | | | 20.0 |
| 6,425 to 6,525..... | | | 20.0 |
| 6,875 to 7,125..... | +35 | | 20.0 |
| 12,700 to 13,250..... | +35 | 5.0 | 1.5 |
| 17,700 to 18,600..... | +45 | 10.0 | |
| 18,600 to 18,800..... | | 10.0 | |
| 18,800 to 19,700..... | | 10.0 | |
| 31,000 to 31,300..... | | 0.05 | 0.05 |

\1\The power delivered to the antenna is limited to -3 dBW.

(b) LDS stations shall use for the visual signal-vestigial sideband AM transmission. When vestigial sideband AM transmission is used the peak power of the visual signal on all channels shall be maintained within 2 dB of equality. The mean power of the aural signal on each channel shall not exceed a level of 7 dB below the peak power of the visual signal.

[45 FR 78694, Nov. 26, 1980, as amended at 52 FR 7144, Mar. 9, 1987; 65 FR 48182, Aug. 7, 2000]

[\[TOP\]](#)

§78.103 Emissions and emission limitations.

(a) A CARS station may be authorized to employ any type of emission, for which there are technical standards incorporated in Subpart D of this part, suitable for the simultaneous transmission of visual and aural television signals.

(b) Any emission appearing on a frequency outside of the channel authorized for a transmitter shall be attenuated below the power of the emission in accordance with the following schedule:

(1) For stations using FM or double sideband AM transmission:

(i) On any frequency above the upper channel limit or below the lower channel limit by between zero and 50 percent of the authorized channel width: At least 25 decibels below the mean power of the emission;

(ii) On any frequency above the upper channel limit or below the lower channel limit by more than 50 percent and up to 150 percent of the authorized channel width: At least 35 decibels below the mean power of the emission; and

(iii) On any frequency above the upper channel limit or below the lower channel limit by more than 150 percent of the authorized channel width: At least $43 + 10 \log_{10}$ (power in watts) decibels below the mean power of the emission.

(2) For CARS stations using vestigial sideband AM transmission: At least 50 decibels below the peak power of the emission.

(c) For operation in the 17.7-19.7 GHz band:

The mean power of any emission shall be attenuated below the mean output power of the transmitter in accordance with the following schedule:

(1) When using frequency modulation:

(i) On any frequency removed from the assigned (center) frequency by more than 50% up to and including 100% of the authorized bandwidth: At least 25 dB;

(ii) On any frequency removed from the assigned (center) frequency by more than 100% up to and including 250% of the authorized bandwidth: At least 35 dB;

(iii) On any frequency removed from the assigned (center) frequency by more than 250% of the authorized bandwidth: At least $43 + 10 \log_{10}$ (mean output power in watts) dB, or 80 dB, whichever is the lesser attenuation.

(2) When using digital modulation:

(i) In any 1 MHz band, the center frequency of which is removed from the assigned frequency by more than 50% up to and including 250% of the authorized bandwidth: As specified by the following equation but in no event less than 11 dB.

$$A = 11 + 0.4 (P - 50) + 10 \log_{10} B$$

where:

A=Attenuation (in dB) below the mean output power level.

P=Percent removed from the carrier frequency.

B=Authorized bandwidth in MHz.

[Attenuation greater than 56 decibels is not required.]

(ii) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 250% of the authorized bandwidth: At least $43 + 10 \log_{10}$ (mean output power in watts) dB, or 80 dB, whichever is the lesser attenuation.

(3) Amplitude Modulation:

For vestigial sideband AM video: On any frequency removed from the center frequency of the authorized band by more than 50%: at least 50 dB below peak power of the emission.

(d) In the event that interference to other stations is caused by emissions outside the authorized channel, the Commission may require greater attenuation than that specified in paragraph (b) of this section.

(e) The maximum bandwidth that will be authorized per frequency assignment is set out in the table that follows. Regardless of the maximum authorized bandwidth specified for each frequency band, the Commission reserves the right to issue a license for less than the maximum bandwidth if it appears that a bandwidth less than the maximum would be sufficient to support an applicant's intended communications.

| Frequency band (MHz) | Maximum authorized band-width (MHz) |
|-----------------------|-------------------------------------|
| 1,990 to 2,110..... | 17 or 18.\1\ |
| 6,425 to 6,525..... | 8 or 25. |
| 6,875 to 7,125..... | 25. |
| 12,700 to 13,250..... | 25. |
| 17,700 to 19,700..... | 80. |
| 31,000 to 31,300..... | 25 or 50. |

\1\After a licensee has been relocated in accordance with Sec. 78.40, the maximum authorized bandwidth in the frequency band 2,025 to 2,110 MHz will be 12.1/12.4 MHz.

[37 FR 3292, Feb. 12, 1972, as amended at 37 FR 15927, Aug. 8, 1972; 38 FR 16648, June 25, 1973; 39 FR 26025, July 16, 1974; 48 FR 50736, Nov. 3, 1983; 49 FR 37779, Sept. 26, 1984; 52 FR 7145, Mar. 9, 1987; 65 FR 48182, Aug. 7, 2000]

[\[TOP\]](#)

§78.104 Authorized bandwidth and emission designator.

(a) The authorized bandwidth permitted to be used by a CARS station and specified in the station license shall be the occupied or necessary bandwidth, whichever is greater, except when otherwise authorized by the Commission in accordance with paragraph (b) of this section.

(b) As an exception to the provision of paragraph (a) of this section, the Commission may approve requests to base the authorized bandwidth for the station on the lesser of the occupied or necessary bandwidth where a persuasive showing is made that:

(1) The frequency stability of the transmitting equipment to be used will permit compliance with §78.103(b)(1) and, additionally, will permit 99 percent of the total radiated power to be kept within the frequency limits of the assigned channel.

(c) The emission designator shall be specified in terms of the necessary bandwidth. (See §2.201(a) of this chapter.)

| | | | | | | | Antenna Standards | | |
|--|----|----|----|----|----|----|-------------------|---------|-----|
| Minimum radiation suppression to angle in degrees from centerline of main beam in decibels | | | | | | | Maximum | | |
| | | | | | | | beamwidth | | |
| | | | | | | | to 3 dB | Minimum | |
| Frequency (MHz) | | | | | | | points\1\ | antenna | |
| Category | | | | | | | (included | gain | 5 |
| | | | | | | | angle in | (dbi) | to |
| | | | | | | | degrees) | | |
| | | | | | | | | | |
| 12,700 to 13,250..... | | | | | | | A | 1.0 | n/a |
| 23 | 28 | 35 | 39 | 41 | 42 | 50 | B | 2.0 | n/a |
| 20 25 28 30 32 37 47 | | | | | | | | | |
| 17,700 to 19,700..... | | | | | | | A | 2.2 | 38 |
| 25 | 29 | 33 | 36 | 42 | 55 | 55 | B | 2.2 | 38 |
| 20 24 28 32 35 36 36 | | | | | | | | | |

| | | | |
|--------------------------|-----|--------|----|
| 31,000 to 31,300\2\..... | n/a | \3\4.0 | 38 |
| n/a n/a n/a n/a n/a n/a | n/a | | |
| 38,600 to 40,000..... | A | 2.2 | 38 |
| 25 29 33 36 42 55 55 | B | 2.2 | 38 |
| 20 24 28 32 35 36 36 | | | |

\1\If a licensee chooses to show compliance using maximum beamwidth to 3 dB points, the beamwidth limit shall apply in both the azimuth and the elevation planes.

\2\Mobile, except aeronautical, mobile, stations need not comply with these standards.

\3\The minimum front-to-back ratio shall be 38 dBi.

(2) New periscope antenna systems will be authorized upon a certification that the radiation, in a horizontal plane, from an illuminating antenna and reflector combination meets or exceeds the antenna standards of this section. This provision similarly applies to passive repeaters employed to redirect or repeat the signal from a station's directional antenna system.

(3) The choice of receiving antennas is left to the discretion of the licensee. However, licensees will not be protected from interference which results from the use of antennas with poorer performance than defined in paragraph (a) of this section.

(4) The transmitting antenna system of stations employing maximum equivalent isotropically radiated power exceeding +45 dBW in the frequency band between 12.70 and 12.75 GHz shall be oriented so that the direction of maximum radiation of any antenna shall be at least 1.5° away from the geostationary satellite orbit, taking into account the effect of atmospheric refractions .1

.1See Chapter I, Article 1, Section III of the (International) Radio Regulations (Geneva, 1959), as amended, for Technical Characteristics Terms and Definitions. Additional information and methods for calculating azimuths to be avoided may be found in the following: Report 393, International Radio Consultative Committee (C.C.I.R.): "Geostationary Orbit Avoidance Computer Program," Reort CC - 7220, Federal Communications Commission, available from the National Technical Information Service, Springfield, VA 22151, in printed form (PB-211 500) or source card deck (PB-211 501).

(5) Pickup stations are not subject to the performance standards herein stated. The provisions of this paragraph are effective for all new applications accepted for filing after October 1, 1981.

(b) Any fixed station licensed pursuant to an application accepted for filing prior to October 1, 1981, may continue to use its existing antenna system, subject to periodic renewal until April 1, 1992, After April 1, 1992, all licensees are to use antenna systems in conformance with the standards of this section. TV auxiliary broadcast stations are considered to be located in an area subject to frequency congestion and must employ a Category A antenna when:

(1) A showing by an applicant of a new CAR service or TV auxiliary broadcast, which shares the 12.7-13.20 GHz band with CARS, indicates that use of a category B antenna limits a proposed project because of interference, and

(2) That use of a category A antenna will remedy the interference thus allowing the project to be realized.

(c) As an exception to the provisions of this section, the FCC may approve requests for use of periscope antenna systems where a persuasive showing is made that no frequency conflicts exist in the area of proposed use. Such approvals shall be conditioned to require conversion to a standard antenna as required in paragraph (a) of this section when an applicant of a new TV auxiliary broadcast or Cable Television Relay station indicates that the

use of the existing antenna system will cause interference and the use of a category A or B antenna will remedy the interference.

(d) As a further exception to the provision of paragraph (a) of this section the Commission may approve antenna systems not conforming to the technical standards where a persuasive showing is made that:

(1) Indicates in detail why an antenna system complying with the requirements of paragraph (a) of this section cannot be installed, and

(2) Includes a statement indicating that frequency coordination as required in §78.18a was accomplished.

[45 FR 78694, Nov. 26, 1980, as amended at 49 FR 37779, Sept. 26, 1984; 50 FR 7343, Feb. 22, 1985; 51 FR 19841, June 3, 1986; 56 FR 50664, Oct. 8, 1991; 62 FR 4923, Feb. 3, 1997]

[\[TOP\]](#)

§78.106 Interferences to geostationary-satellites.

These limitations are necessary to minimize the probability of harmful interference to reception in the bands 2655-2690 MHz, 5850-7075 MHz, and 12.7-13.25 GHz on board geostationary space stations in the fixed-satellite service (part 25). Facilities authorized prior to July 1, 1978 which exceed the power levels in paragraphs (a) and (b) of this section are permitted to operate indefinitely, provided that the operation of such facilities does not result in harmful interference to reception in these band on board geostationary space stations.

(a) *2655 to 2690 MHz and 5850 to 7075 MHz.* No directional transmitting antenna utilized by a fixed station operating in these bands shall be aimed within 2 degrees of the geostationary-satellite orbit, taking into account atmospheric refraction. However, exception may be made in unusual circumstances upon a showing that there is no reasonable alternative to the transmission path proposed. If there is no evidence that such exception would cause possible harmful interference to an authorized satellite system, said transmission path may be authorized on waiver basis where the maximum value of the equivalent isotropically radiated power (EIRP) does not exceed:

(1) +47 dBW for any antenna beam directed within 0.5 degrees of the stationary satellite orbit or

(2) +47 to +55 dBW, on a linear decibel scale (8 dB per degree) for any antenna beam directed between 0.5 degrees and 1.5 degrees of the stationary orbit.

(b) *12.7-13.25 GHz.* No directional transmitting antenna utilized by a fixed station operating in this band shall be aimed within 1.5 degrees of the geostationary-satellite orbit, taking into account atmospheric refraction. However, exception may be made in unusual circumstances upon a showing that there is no reasonable alternative to the transmission path proposed. If there is no evidence that such exception would cause possible harmful interference to an authorized satellite system, said transmission path may be authorized on waiver basis where the maximum value of the equivalent isotropically radiated power (EIRP) does not exceed +45 dBW for any antenna beam directed within 1.5 degrees of the stationary satellite orbit.

(c) Methods for calculating the azimuths to be avoided may be found in: CCIR Report No. 393 (Green Books), New Delhi, 1970; in "Radio-Relay Antenna Pointing for controlled Interference With Geostationary-Satellites" by C.W. Lundgren and A.S. May, *Bell System Technical Journal*, Vol. 48, No. 10, pp. 3387-3422, December 1969; and in "Geostationary Orbit Avoidance Computer Program" by Richard G. Gould, Common Carrier Bureau Report CC-7201, FCC, Washington, DC, 1972. This latter report is available through the National Technical

Information Service, U.S. Department of Commerce, Springfield, VA 22151, in printed form (PB-211 500) or source card deck (PB-211 501).

[52 FR 7145, Mar. 9, 1987]

[\[TOP\]](#)

§78.107 Equipment and installation.

(a) Applications for new cable television relay stations, other than fixed stations, will not be accepted unless the equipment specified therein has been certificated. In the case of fixed stations, the equipment must be authorized under the verification procedure for use pursuant to the provisions of this subpart. Transmitters designed for use in the 31.0 to 31.3 GHz band shall be authorized under the verification procedure.

(1) All transmitters first licensed or marketed shall comply with technical standards of this subpart. This paragraph (b)(1) of this section is effective October 1, 1981.

(2) Neither certification nor verification is required for the following transmitters:

(i) Those which have an output power not greater than 250 mW and which are used in a CARS pickup station operating in the 12.7-13.2 GHz band; and

(ii) Those used under a developmental authorization.

(b) Cable television relay station transmitting equipment authorized to be used pursuant to an application accepted for filing prior to October 1, 1981, may continue to be used, provided, that if operation of such equipment causes harmful interference due to its failure to comply with the technical standards set forth in this subpart the Commission may, at its discretion, require the licensee to take such corrective action as is necessary to eliminate the interference.

(c) The installation of a CARS station shall be made by or under the immediate supervision of a qualified engineer. Any tests or adjustments requiring the radiation of signals and which could result in improper operation shall be conducted by or under the immediate supervision of a person with required knowledge and skill to perform such tasks.

(d) Simple repairs such as the replacement of tubes, fuses, or other plug-in components which require no particular skill may be made by an unskilled person. Repairs requiring replacement of attached components or the adjustment of critical circuits or corroborative measurements shall be made only by a person with required knowledge and skill to perform such tasks.

[37 FR 3292, Feb. 12, 1972, as amended at 45 FR 78695, Nov. 26, 1980; 49 FR 4001, Feb. 1, 1984; 49 FR 20672, May 16, 1984; 50 FR 7343, Feb. 22, 1985; 63 FR 36606, July 7, 1998; 63 FR 49870, Sept. 18, 1998]

[\[TOP\]](#)

§78.108 Minimum path lengths for fixed links.

(a) The distance between end points of a fixed link must equal or exceed the value set forth in the table below or the EIRP must be reduced in accordance with the equation set forth below.

| Frequency band (MHz) | Minimum path length (km) |
|-----------------------|--------------------------|
| 12,200 to 13,250..... | 5 |
| Above 17,700..... | N/A |

(b) For paths shorter than those specified in the Table, the EIRP shall not exceed the value derived from the following equation.

$$\text{EIRP} = 30 - 20 \log [A/B], \text{ dBW}$$

Where:

EIRP = equivalent isotropic radiated power in dBW.

A = Minimum path length from the Table for the frequency band in kilometers.

B = The actual path length in kilo meters.

(c) Upon an appropriate technical showing, applicants and licensees unable to meet the minimum path length requirement may be granted an exception to these requirements.

Note: Links authorized prior to April 1, 1987, are excluded from this requirement, except that, effective April 1, 1992, the Commission will require compliance with the criteria where an existing link would otherwise preclude establishment of a new link.

[52 FR 7145, Mar. 9, 1987]

[\[TOP\]](#)

§78.109 Equipment changes.

(a) Formal application is required for any of the following changes:

- (1) Any increase in emission bandwidth beyond that authorized;
- (2) Any change in the transmitting antenna system of a station, other than a CARS pickup station, including the direction of the main radiation lobe, directive pattern, antenna gain or transmission line;
- (3) Any horizontal change in the location of the antenna, other than a CARS pickup station, transmitter.
- (4) Any change in the type of modulation;
- (5) Any change in the location of a station transmitter, other than a CARS pickup station transmitter, except a move within the same building or upon the tower or mast or a change in the area of operation of a CARS pickup station.
- (6) Any change in frequency assignment, including polarization;

(7) Any change in authorized operating power.

(b) Other equipment changes not specifically referred to in paragraph (a) of this section may be made at the discretion of the licensee, provided that the Engineer in Charge of the radio district in which the station is located and the Commission in Washington, DC, are notified in writing upon the completion of such changes and provided further, that the changes are appropriately reflected in the next application for renewal of licenses of the station.

(c) Any application proposing a change in the height of the antenna structure or its location shall include the Antenna Structure Registration Number (FCC Form 854R) of the structure upon which it proposes to locate its antenna. In the event the antenna structure does not have a Registration Number, the owner of the antenna structure shall file an FCC Form 854 ("Application for Antenna Structure Registration") in accordance with part 17 of this chapter or the applicant shall provide a detailed explanation as to why registration and clearance are not required.

(d) *Permissible changes in equipment operating in the band 19.26-19.3 GHz.* Notwithstanding other provisions of this section, licensees of stations that remain co-primary under the provisions of §78.18(a)(4) may not make modifications to their systems that increase interference to satellite earth stations, or result in a facility that would be more costly to relocate.

[37 FR 3292, Feb. 12, 1972, as amended at 38 FR 6827, Mar. 3, 1973; 41 FR 29696, July 19, 1976; 61 FR 4368, Feb. 6, 1996; 65 FR 54173, Sept. 7, 2000]

[\[TOP\]](#)

§78.111 Frequency tolerance.

Stations in this service shall maintain the carrier frequency of each authorized transmitter to within the following percentage of the assigned frequency.

| Frequency band (MHz) | Frequency tolerance | |
|--------------------------|---------------------|---------------------|
| | Fixed (percent) | Mobile (percent) |
| 1,990 to 2,110..... | | 0.005 |
| 6,425 to 6,525..... | | 0.005 |
| 6,875 to 7,125..... | | 0.005 |
| 12,700 to 13,250\1\..... | 0.005 | 0.005 |
| 17,700 to 18,820..... | 0.003 | |
| 18,820 to 18,920..... | 0.001 | |
| 18,920 to 19,700..... | 0.003 | |
| 31,000 to 31,300..... | 0.05 | 0.05 |

\1\ Stations that employing vestigial sideband AM transmissions shall maintain their operating frequency within 0.0005% the visual carrier, and the aural carrier shall be 4.5 MHz<plus-minus> 1 kHz above the visual carrier frequency.

[\[TOP\]](#)

§78.113 Frequency monitors and measurements.

(a) The licensee of each CARS station shall employ a suitable procedure to determine that the carrier frequency of each transmitter is maintained within the tolerance prescribed in §78.111 at all times. The determination shall be made, and the results thereof entered in the station records: when a transmitter is initially installed; when any change is made in a transmitter which may affect the carrier frequency or the stability thereof; or in any case at intervals not exceeding one year.

(b) The choice of apparatus to measure the operating frequency is left to the discretion of the licensee. However, failure of the apparatus to detect departures of the operating frequency in excess of the prescribed tolerance will not be deemed an acceptable excuse for the violation.

[37 FR 3292, Feb. 12, 1972, as amended at 41 FR 29696, July 19, 1976; 50 FR 23422, June 4, 1985]

[\[TOP\]](#)

§78.115 Modulation limits.

(a) If amplitude modulation is employed, negative modulation peaks shall not exceed 100 percent modulation.

[37 FR 3292, Feb. 12, 1972, as amended at 45 FR 78696, Nov. 26, 1980]

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[50 FR 38537, Sept. 23, 1985, as amended at 63 FR 36606, July 7, 1998]

